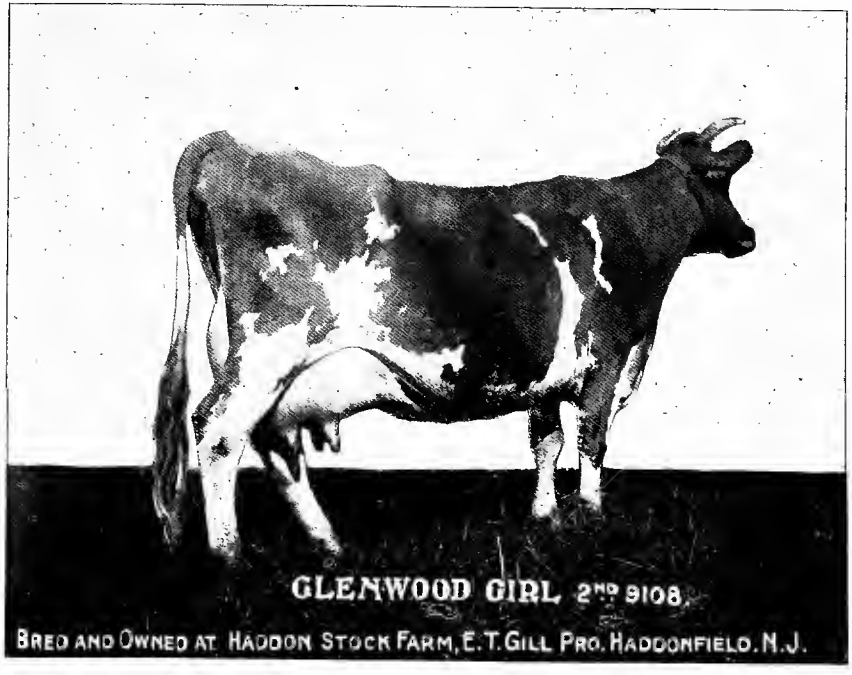

GLENWOOD GIRL 2ND 9108
BRED AND OWNED AT HADDON STOCK FARM, E. T. GILL PRO. HADDONFIELD, N.J.

PROCEEDINGS

OF THE

Guernsey Breeders'

Association.

CONTAINING, IN A SOMEWHAT ABRIDGED FORM, THE WORKINGS OF THE ASSOCIATION SINCE ITS ORGANIZATION IN 1884.

Published by authority of the Association.

WEST GROVE, PA.
1899.

INTRODUCTION.

For a period of fifteen years, the Guernsey Breeders' Association has been exerting an influence for the improvement of the dairy types of cattle by the Guernsey breed; feeling that they embrace the greatest number of points which count towards making a special purpose dairy breed, used either as thoroughbreds or in grading up working herds.

In economy of production for feed consumed, richness and superiority of product, and persistency of milk flow, the Guernsey stands in the very fore front in the dairy world.

This Association has acted as a live ally to, and in harmony with, the American Guernsey Cattle Club, which, under the present able management, is doing much in different ways towards the advancement of the cattle.

Our breeders have been slow in forcing upon the public mind the many good qualities of their herds. In very few, if any instances, have they resorted to heavy and impractical rations in order to advertise great records.

The steady growth in the demand for Guernseys has a solid foundation, based on practical results at the pail and churn, also in the show ring.

The membership of the Guernsey Breeders' Association has embraced many of the prominent breeders of dairy stock in the Eastern States, who have given us the results of their valuable experience. Quite a number of our standard bearers have been taken from us by death; we have keenly felt our loss; our membership, however, is decidedly on the increase, and timely topics are discussed in an intelligent manner.

The meetings of the Association have been held at the farms of members during the summer season, and in Philadelphia in winter; the sessions have not been held at regular intervals, and the subjects for discussion have embraced breeding and feeding problems, disorders of live stock, also the broad field of agriculture, and to some extent horticultural matters.

Our committees have taken a prominent part in promoting legislation favorable to agriculture, stock breeding, and kindred interests, and in opposing unjust bills.

It has been felt that much valuable information has been, and is, derived by attending the meetings of the Association, and that the proceeding as shown by the minutes, should have a wider field of publicity than the comparatively small circle embraced in our membership; it is with a view of letting our light shine that this book has been published.

LIST OF MEMBERS.

-1899-

ABBOTT, GEORGE, . . . 1823 Filbert Street, Philadelphia.
ABBOTT, GEORGE, JR., . . 1823 Filbert Street, Philadelphia.
ALBERTSON, CHARLES S., ... Magnolia, N. J.
BAILEY, WILLIAM E., ... Thorndale, Pa.
BALDERSTON, ELWOOD, ... Colora, Md.
BALDERSTON, JOHN L., ... Kennett Square, Pa.
BALDERSTON, WILLIAM, ... Morrisville, Pa.
BELL, HOWARD H., ... Mt. Ephraim, N. J.
BRANSON, J. L., . . . 506 St. John Street Philadelphia.
BROSIUS, A. C., ... Cochranville, Pa.
BRIGGS, THOMAS, ... Newtown, Pa.
BURGESS, WILLIAM, ... Trenton, N. J.
CARSLAKE, CHARLES L., ... Columbus, N. J.
CARTER, JOHN I. . . . . Chatham, Pa.
CASE, CHARLES B., ... Trenton, N. J.
CASSATT, A. J., . . 26 South Fifteenth Street, Philadelphia.
CLYMER, LEE S., ... Riegelsville, Pa.
COCHLIN, WILLIAM F., ... Leonard, Pa.
CONARD, V M. D., M. E., ... West Grove, Pa.
COMFORT, H. W., ... Fallsington, Pa.
COOK, CHARLES HOWELL, . . . Trenton, N. J.
COOPER, DAVID E., ... Marlton, N. J.
COOPER, RICHARD M., ... Ashland, N. J.
COOPER, SAMUEL, ... Marlton, N. J.
COOPER, WILLIAM B., ... Marlton, N. J.
DECOU, THOMAS B., ... Trenton, N. J.
DUDLEY, OWEN L., ... Moorestown, N. J.
DYE, FRANKLIN, ... Trenton, N. J.
EARL, HARRY, . . 135 Ocean Avenue, Atlantic City, N. J.
EVANS, ELWOOD, ... Haddonfield, N. J.
EVANS, EZRA, ... Marlton, N. J.
EVANS, JOSEPH, ... Marlton, N. J.
EVANS, ROBERT T., ... Masonville, N. J.
EVANS, WILLIAM J., ... Marlton, N. J.
EVENS, HOWARD, ... Marlton, N. J.
FISHER, J. LOGAN, ... Crescentville, Philadelphia.
FORNEY. D. P., ... Hanover, Pa.
FOULKE, G. R., ... West Chester, Pa.
GARDINER, S. H., ... Ashland, N. J.
GILL, E. T., ... Haddonfield, N. J.
GILLINGHAM, GEORGE L., ... Moorestown, N. J.
HAINES, ALBERT, ... Masonville. N. J.
HAINES, CHARLES, ... Maple Shade, N. J.

HAINES, EDGAR T., ... West Grove, Pa.
HAINES, JOSEPH H., ... Medford, N. J.
HARMER, EDWARD S., ... Moorestown, N. J.
HARVEY, ROLPH M., ... Ward, Pa.
HARVEY, WILLIAM B., ... West Grove, Pa.
HEISEY, S. C., ... Rheems, Pa.
HIGGINS, ANTHONY, ... Wilmington, Del.
HIGGINS, HENRY R., ... Delaware City, Del.
HIGGINS, JOHN C., ... Dundee, Scotland.
HOLLINGSWORTH, E. J., ... Landenberg, Pa.
HOLLINGSWORTH, M. M., ... Landenberg, Pa.
HOPE, J. L., ... Madison, N. J.
HOUSTON. S. F . . . 305 Walnut Street, Philadelphia
HUGHES, MARK, ... West Grove, Pa.
HUNT. E. W., ... Kirkwood, N. J.
HUNT, WALTER E., . . . , . . Haddonfield, N. J.
HUTCHINSON, J., ... Haddonfield. N. J.
IVINS, M. HARVEY. . . . . Penn Valley, Pa.
JACKSON, J P. . . . . New London, Pa.
JONES, MARSHALL, L., ... Upper Darby, Pa.
JONES. S. MORRIS, ... West Grove, Pa.
JONES, WILLIAM H., ... Upper Darby, Pa.
KEELER, E. WESLEY, ... Doylestown, Pa.
KIRKBRIDE, EDWARD S., ... Morrisville, Pa.
LIPPINCOTT, BENJAMIN A., . . . Haddon Heights, N. J.
LIPPINCOTT, CHARLES A., ... Moorestown, N. J.
LIPPINCOTT, FREDERIC, ... Moorestown, N. J.
LIPPINCOTT, ISAAC., ... Moorestown, N. J.
LIPPINCOTT, JACOB C., ... Kirkwood, N. J.
LIPPINCOTT, JOHN M., ... Moorestown, N. J.
LIPPINCOTT, WILLIAM B., ... Hartford, N J.
MAGILL, V. M. D , C. E., ... Haddonfield, N J.
MARSHALL, HENRY, ... Norway, Pa.
MATLACK, JOSEPH H., ... Moorestown, N. J.
MATLACK, WILLIAM, ... Moorestown, N, J.
MECRAY, V. M. D., JAMES, ... Maple Shade, N. J.
MICHENER, EZRA, ... Carversville, Pa.
MILLER, WILLIAM H., ... Media, Pa.
MITCHELL, B. C., ... Brandamore, Pa.
MITCHELL, D THOMPSON, ... Union, Del.
MURPHY. EUGENE W., ... Mendenhall, Pa.
NEALE, Dr. A. T., ... Newark, Del.
NEWBOLD, JAMES S., ... Morrisville, Pa.
PALMER, EVERETT, ... Avondale, Pa.
PALMER, HENRY, ... Avondale, Pa.
PAUL, WILLIAM M., ... Moorestown, N. J.
PEARSON, Dr. LEONARD, . . 3608 Pine Street, Philadelphia.
PENNY, Prof. C. L., ... Newark, Del.
RAMSEY, JAMES, ... Londonderry, Pa.
RICHARDS, M. D., J. N., ... Fallsington, Pa.

RIDGWAY, R. T., ... Cream Ridge, N. J.
RISDEN, LEVI B., ... Trenton, N. J.
ROBERTS, ALLEN H., ... Moorestown, N. J.
ROBERTS, DAVID, ... Moorestown, N. J.
ROBERTS, ISAAC L., ... Moorestown, N. J.
ROBERTS, JOSEPH H., ... Moorestown, N. J.
SATTERTHWAITE, H. W., ... Fallsington, Pa.
SCOTT, ISRAEL, ... Ward, Pa.
SHARPLESS, BENJAMIN, ... West Chester, Pa.
SHARPLESS EDWARD, ... Landenberg, Pa.
SHARPLESS, EVAN, ... London Grove, Pa.
SHARPLESS, JOHN P., ... London Grove, Pa.
SHARPLESS, JOSEPH C., ... London Grove, Pa.
SHARPLESS, P. E., ... Ward, Pa.
SHARPLESS, THOMAS, ... West Chester, Pa.
SHIVERS, R. LEVIS, ... Camden, N. J.
SMITH, R. PENN, ... Berwyn, Pa.
SNYDER, A. J., ... Plumsteadville, Pa.
STAGGERS, JR., E. B., ... Newark, Del.
STOKES, WALTER P., . . . 219 Market Street, Philadelphia.
STRAWBRIDGE, EDWARD R., ... Moorestown, N. J.
SUTPHIN, JOHN W., ... Trenton, N. J.
TAYLOR, H. G., ... Riverton, N. J.
THOMPSON, SAMUEL S., N. E. corner 12th and Chestnut Sts., Phila.
TRIMBLE, JOSEPH, ... Chester, Pa.
TOMLINSON, B. A., . . . Laurel Springs, N. J.
TOMLINSON, EPHRAIM, ... Kirkwood, N. J.
TOMLINSON, LEMUEL, ... Marlton, N. J.
TOMLINSON, WILLIAM I., ... Kirkwood, N. J.
TWOMBLY, H. McK., ... Madison, N. J.
TYLER, JOHN, ... Salem, N. J.
VOORHEES, E. B., ... New Brunswick, N. J.
WALTON, DR. JOSEPH S., ... Ercildoun, Pa.
WELSH, J. P., ... Bloomsburg, Pa.
WILLIAMSON, EDWARD C., ... Morrisville, Pa.
WILLS, JOSHUA S., ... Medford, N. J.
WILSON, C. G., ... Greenville, Del.
WOOD, SAMUEL, ... Haddonfield, N. J.
WRIGHT, CHARLES, ... Columbus, N. J.

ORGANIZATION.

PHILADELPHIA, January 25, 1884.

Dear Sir:

It is intended to organize a Chapter of the GUERNSEY CLUB, to be formed of the breeders and admirers of that strain of cattle. The meetings will be held, during the winter, monthly at the rooms of the Philadelphia Society for Promoting Agriculture, No. 244 South Third Street, and subsequently at the neighboring farms of the members.

You are urgently requested to be present at said rooms on February 5th next, at 11 o'clock a. m.

Yours, truly,

THOMAS M. HARVEY,
FRANK M. ETTING,
HENRY PALMER,
GEORGE BLIGHT.

Pursuant to the foregoing notice, the following gentlemen met: Henry Palmer, Avondale, Pa.; George Blight, Philadelphia; F. A. Comly, Fort Washington, Pa.; Silas Betts, Camden, N. J.; Ezra Michener, Carversville, Pa.; R. H. Hodgson, New London, Pa.; John C. Higgins, Delaware City, Del.; Benjamin Sharpless, West Chester Pa.; William B. Harvey, West Grove, Pa.; W. P. Hazard, West Chester, Pa.; Charles S. Carter, West Chester, Pa.; Samuel C. Kent, West Grove, Pa.; Thomas F. Seal, Unionville, Pa.; J. William Cox, Norway, Pa.; Mark Hughes, West Grove, Pa.; Frank M. Etting, Markham, Pa.

Upon motion of Col. Etting, Mr. Blight was called to the chair, who then stated that it had been determined to organize a Guernsey Club to encourage the proper breeding and improvement of that breed of milch cows; and he called upon Col. Etting to read (after designating him as Secretary) the draft of the constitution of the organization.

On motion of Mr. Betts, Mr. Palmer, Mr. Kent, and the Secretary were appointed a Committee to draft by-laws.

Next meeting was fixed for Monday, February 25th, at eleven o'clock.

The subject fixed for discussion at next meeting shall be "Treatment of Breeding Cows at and about calving."

CONSTITUTION.

PREAMBLE.

The undersigned breeders and admirers of Guernsey cattle as a favorite dairy breed, unite as an association, the object of which shall be the promotion and encouragement of breeding Guernsey cattle, their advancement, and the discussion of such topics as may be of general merit.

ARTICLE 1. We organize under the name of "Guernsey Breeders' Association," with headquarters in Philadelphia.

ART. 2. Membership shall comprise any members of the American Guernsey Cattle Club, and such breeders or advocates of this breed of cattle as may be elected by the club, pursuant to the by-laws.

ART. 3. Officers shall consist of a President, two vice-Presidents, Secretary and Treasurer, who, with three others, to be elected at each annual meeting of the club, shall constitute the Executive Committee.

ART. 4. The annual meetings shall be held upon the last Second-day (Monday) of First Month (January) at Philadelphia, and monthly meetings may be fixed by the by-laws.

ART. 5. Special meetings may be called by the President at the request of ten members; twenty days' notice being required for the transaction of any business. The object of such meetings shall be announced in the call, and no other business shall be transacted.

ART. 6. Any member may be expelled by a majority vote of all members of the club.

ART. 7. Alterations or amendments to this constitution may be made by a two-thirds vote at an annual meeting of the club; thirty days' notice being given of the proposed change.

BY-LAWS.

ARTICLE 1. ORDER OF BUSINESS.

1. Roll Call.
2. Reading of minutes of previous meeting.
3. Nominations and elections.
4. Reports of committees.
5. Deferred business.
6. Communications.

7. New business.
8. Discussion of questions.

ART. 2. Outside of members of the American Guernsey Cattle Club, applicants for membership shall be voted for by ballot, and shall have been nominated at the preceeding meeting; two negative votes shall exclude the applicant, who must either be a Guernsey breeder or an advocate of the Guernsey as the favorite dairy breed. Those voting negatively must give satisfactory reasons to the executive committee before such votes become valid.

ART. 3. Five members shall constitute a quorum.

ART. 4. The executive committee shall transact the preliminary business of the association. They shall elect their own chairman and secretary. They shall provide essayists and other business for the meetings. Four members shall constitute a quorum.

ART. 5. The day of the meetings at the farms of members shall be arranged between the breeder and the executive committee, and notification given two weeks in advance, where the second Sixth-day (Friday) of each month is not acceptable. The secretary shall send notices to all members of all meetings.

ART. 6. The entrance fee shall be three dollars.

ART. 7. All members shall notify the host within ten days of time of meeting whether he will be present.

ART. 8. An annual fee of one dollar will be imposed upon all members, payable at or before the annual meeting each year; any one failing to pay said fee within a year to be stricken from the list.

ART. 9. Alterations or amendments to these by-laws may be made by a majority vote of those present at a regular meeting of the association.

MINUTES OF MEETINGS.

Minutes of Meeting held Second Month 25th, 1884.

Pursuant to previous arrangement, the Guernsey Breeders' Association convened at the room of the Philadelphia Agricultural Society with a good attendance of members and some others interested in breeding.

After the meeting was called to order by chairman George Blight, the minutes of our previous meeting were read and adopted, after which was held the election of officers.

Henry Palmer was elected President, Ezra Michener and George Blight vice-Presidents, William B. Harvey Secretary, and Samuel C. Kent Treasurer. Edward Walter, Alexander Scott, Thomas M. Harvey, Joseph Pyle, Benjamin J. Hoopes, Israel R. Scott were elected members by acclamation, the last named gentleman not being present.

The new President and Secretary took their respective seats, when the President appointed F. M. Etting, John C. Higgins, and Silas Betts as an Executive Committee.

F. M. Etting read an interesting article on the Management of Cows six weeks before, at, and six weeks after calving, which opened the way for considerable discussion. Samuel C. Kent thought the cow should be blanketed and a bran mash given at once to remove the placenta, it making the necessary heat. W. P. Hazard thought four to six weeks sufficient time to allow a cow for rest previous to calving, and not only for the dam's sake was rest needful, but that it was necessary to stop the milk that the fœtus might more fully develop. Thomas Sharpless was satisfied that cotton seed meal fed to cows while suckling calves was a very fruitful source of diarrhœa. R. H. Hodgson valued oats highly as food for breeding stock. Ezra Michener allowed his cows to eat their placenta. Thomas M. Harvey wished to know whether the after-birth was digestible.

As the subject was not well understood, the meeting agreed that the following question be referred to Ezra Michener, viz.; "Is the stomach of a cow capable of digesting the placenta, and should cows be allowed to eat them; and are drainings from the barnyard injurious to them for drinking?"

Benjamin Hoopes thought warm water was objectionable for cows at calving, acting as nausea, and not likely to be drank; he preferred having cold water in the stable all the time.

The subject of milk fever was discussed somewhat. T. M. Harvey had experienced much benefit from Arsenicum; he said liquid and solid medicines went different channels and require judgment in administering; cows are not capable of swallowing when affected with milk fever. E. Michener gave salts and ginger and two drops of aconite every two hours for a day, together with almost continued rubbing of the back and legs.

The bill lately introduced in the National House of Representatives was read by the Secretary. This bill, which calls for the establishment of a Bureau of Animal Industry under the Department of Agriculture for the eradication of contagious Pleura-Pneumonia, etc., was fully approved of by the Association. The following resolution was agreed upon, viz:

"Resolved, That this Association fully approves and seconds the bill before Congress relative to the establishment of a Commission under the Department of Agriculture, for the eradication of Pleuro-Pneumonia and other contagious diseases; that W. P. Hazard of Pennsylvania, John C. Higgins of Delaware, and Silas Betts of New Jersey are appointed to communicate with the members of Congress in their respective States, urging them to use their influence for its passage."

Thomas M. Harvey was appointed to produce an essay at our next meeting on the value of thoroughbred bulls to farmers for raising grades; after which the subject is to be discussed.

Then adjourned to meet Third Month 14th, at same place.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Third Month 14th, 1884.

The Guernsey Breeders' Association met Third Month 14th in Philadelphia, with a good attendance. The following persons were nominated to be voted on at next meeting:

A. J. Cassatt, J. W. Fuller, H. W. Livingstone, Johnston Livingstone, S. S. Spencer, R. Stuyvestant, G. S. Watts, E. R. Wilson, Langhorne Wistar, Ephraim T. Gill, and Elwood Balderston.

Twenty dollars ($20) was agreed upon as an anuual rent for the room of the Philadelphia Agricultural Society.

Ezra Michener was not prepared to answer his question relative to cows eating their placenta. Thomas M. Harvey, according to appointment, took the floor to open the subject of the value of thoroughbred bulls to farmers for raising grades. He said all cattle came from two breeds—Hump-backed and European, and from these two kinds the many breeds now extant originated; some for the production of milk, others butter, and still others for beef. He advised that fixed breeds should not be crossed, as neither would yield points to the other; consequently but little advantage would be gained. It is better to breed in line. Take common cows not having fixed points, thoroughbred bulls will stamp their qualities upon them. Farmers and butchers prefer Guernsey to Jersey veals.

Ezra Michener had a Guernsey veal to weigh 195 pounds at five weeks.

It was thought that thoroughbreds were those entitled to be registered, and those which cannot be registered cannot be proven to be thoroughbred.

R. H. Hodgson thought there was not sufficient recognition at the Fairs of good dairy cows. It was advised that farmers should raise their own cows, thereby shielding themselves from pleura-pneumonia, etc., and being more certain to have profitable animals.

Elwood Balderston said that his father some years ago changed common cows to grades; that previous to the change they averaged three and one-half pounds butter per week per cow, but that the average of their dairy of grades now is about five pounds per week for the year. Silas Betts thought we should not move too fast, that we were learners, that the number of practical breeders was very small. He thought the Guernseys were admitted to be as a whole the richest class of cattle in the world; that being secured, we should keep the ball rolling, and improvement would follow. He admitted that the Jerseys had gone a little further than the Guernseys, having had more time, but we have uniform richness, and he thought we could arrive at results equal to theirs in less time. He thought we should have to inbreed to a certain extent, that there might be more prepotency; that we should be willing to sell bulls to farmers at prices within their reach. Ezra Michener found that when his neighbors purchased a Guernsey bull, they would come back again for more, and that the gain from a Guernsey over a common cow was fully a pound per week, and the butter worth five cents a pound more. F. M. Etting had recently taken some of the milk from his Guernsey cows to a creamery, and the result was that five and one-third quarts of milk made one pound of butter.

The subject for discussion at our next meeting has been changed to the following: "The value in shape, size, and general characteristics, of the so-called milk vein in cows and bulls.

Adjourned to meet next at the home of Samuel C. Kent Fourth Month 30th, 1884.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fourth Month 30th, 1884.

The Guernsey Club met at West Grove in the Good Templars room of the new Bank Building. There was a good attendance of members and others.

After reading and adopting the minutes of the last meeting, Ephraim T. Gill and Elwood Balderston were elected members and S. Morris Jones and Marcellus Cook nominated for membership. A number of others, members of the American Guernsey Cattle Club, were elected by acclamation, who are entitled to an active membership upon payment of the initiation fee.

"The most effective method for the improvement of native cows for the dairy," was the subject agreed upon for discussion at our next meeting.

In deferred business, Ezra Michener replied to the question referred to him at a previous meeting, relative to the digestible properties of the placenta, etc. He read an interesting paper from Dr. Charles Michener, who gave his opinion that the placenta was digestible and that it did not injure the cow if eaten. Col. Etting thought a cow should be tied up until it was discharged. T. M. Harvey related that he once had a cow to hold her cleaning for a week and when cast excited a Jersey cow near by, which at once dropped her premature calf.

It was voted that each member should be requested to write an essay upon the Guernsey, giving their reasons for keeping them, etc., the idea being to gain all the useful points attainable, preparatory to preparing a full essay on Guernseys, which would include the substance of these papers. It was decided that the host should introduce the subject for discussion, which subject should be announced at the foregoing meeting; it is to be such a topic as the host suggests, providing it be approved of by the executive committee and the meeting.

The subject for discussion was then entered upon, viz : "The value in shape, size, and general characteristics of the so-called milk veins in cows and bulls." Samuel C. Kent opened the discussion. He thought very good cows did not always have specially good milk veins ; he preferred a vein of tortuous course, and that the veins of inbred animals appeared to be rather more prominent than others, perhaps owing to their having thinner skins.

The question arose where the change from blood to milk took place, which could not be answered. W. P. Hazard thought as the milk came nearer the outlet, the blood was more fully combined with fatty matter, which gave it a lighter appearance. The same person read a very interesting article in relation to the milk vein. He said the milk veins were erroneously called, that they should be termed Mammary veins, as they convey blood to and from the heart, and the more prominent the more vigorously the change of blood was carried on. In some cases, cows which had well-developed veins were poor milkers, though had good calves. Under these circumstances the calves were generally fully and very well developed, and often were superior to their dams.

A vote of thanks was extended to W. P. Hazard, which practice was considered out of place for members, and agreed not to be followed except to non-members. It was decided to hold the next meeting at the home of Col. Etting Fifth Month 16th.

After adjournment the company was conveyed to the residence of S. C. Kent, where was prepared an excellent meal, after which a large herd of imported heifers in a lot near by were inspected. Two large herds of imported Guernseys at the farm of Mark Hughes were also visited, one of which in addition to the heifers before mentioned, comprise the Philadelphia sale the last of next month.

An informal meeting was held at Hughes's, where food for dairy stock, Centrifugal Machines, etc., were discussed. By this time the afternoon was far spent, and the guests parted after spending a pleasant and profitable day.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fifth Month 16th, 1884.

The Guernsey Breeders' Association met Fifth Month 16th at the home of F. M. Etting, Markham Station, with a fair attendance of members and a number of invited guests. The Colonel's fine heard of Guernseys was examined before the meeting of the Association. They were in fine order and showed well in his new barn built for the special purpose of breeding stock.

The meeting was called to order about 10.30 o'clock by the President. After adopting the minutes of the previous meeting, and reading some communications from persons unable to attend, the subject for discussion was entered upon, viz: "The most effective method for the improvement of native cows for the dairy" F. M. Etting read an interesting article on raising grades, giving their actual cost to farmers at various ages, and showing the benefits of such a course. Judge Biddle, of Philadelphia, gave us some valuable information relative to the first Guernseys imported, which were owned by his father, Nicholas Biddle. Three animals were brought to New York and from thence were bought by him at a cost of $500 for the three. People from far and near brought their cows to the bull, because they noticed a great improvement in the quantity of the cross on their common cows, and no depreciation in quality.

Silas Betts thought the people were being more and more educated to have a preference for Guernseys; that they were educators. He compared them with the many improved appliances exhibited at the Centennial Exhibition, that as these had produced a great improvement among the people in their demanding better machinery, etc., so will people in seeing improved stock demand a better quality. He said the animals of America were of no fixed type as in Continental countries, and consequently were more easily worked upon by thoroughbred animals of standard characteristics.

Alexander Scott produced an article in which he stated his reasons for changing from common to Guernsey stock; previous to the change, twenty-eight common cows made 5,209 pounds of butter in one year; afterwards twenty-eight Guernsey cows made 7,280 pounds in the same time, and that of a firmer and better grade, from which he realized an advanced price.

George Blight gave a brief review of several breeds of cattle, but to the Guernsey he gave the preference, especially for those living near the cities, where large quantities of rich milk and butter

are required. He said they are of good constitution, better able to withstand the changes of our climate, and can take care of themselves. As a dairy cow she is equal to any, the quality of her milk and butter being unexcelled. They are particularly adapted to cross on our common cow, their size and shape being more in unison with that class of animals. Jersey grades are apt to be too weak and unable when matured to bear their bodies without fatigue, or breaking down altogether. He thought Guernsey bulls should not be held too high, as a cross on them with the common cows made a dairy cow of great value, and in a few years the Guernsey will be the greatest dairy cow in our country.

Isaac Evans spoke of the necessity of giving good feed to all dairy animals.

George Abbot, Jr., the Alderney milk dealer in Philadelphia, said the demand was growing greater for good milk and in his calculations, he rated grade milk twelve and one-half per cent., and common milk twenty-five per cent. below the milk from thoroughbred cows, thus showing clearly to the farmer the advantage to improve the tone of his herd.

After quite a lengthy and instructive session, the meeting adjourned to meet Sixth Month 13th at the residence of Silas Betts, where the following subject is to be discussed: "What are the qualities and characteristics of the best Guernsey cow, and what are the most serious defects of the average Guernsey, and how shall we breed in order to perpetuate the good qualities and eliminate the defects?"

We were escorted to the dining-room to our "standing lunch," though do not think that term fairly conveys an idea of the sumptuous repast spread before us.

After spending an hour or more among the stock, the guests again sought their respective homes.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Sixth Month 15th, 1884.

The Guernsey Breeders' Association met Sixth Month 15th, 1884, at the home of Silas Betts, near Camden, N. J.

After the meeting was called to order by the President, and adoption of the minutes of last meeting, Judge Biddle, of Philadelphia, took the floor and read numerous valuable and very interest-

ing letters and newspaper articles, giving the early history of Guernsey cattle, telling of their first introduction into America, etc.

From good authority we were informed that Guernseys were admitted into Jersey to help the quality of the animals on that island, though no Jerseys were admitted to Guernsey. It is more than likely that a number of the famous Jersey families trace back to these Guernsey crosses. Guernseys long ago were popular in Normandy, then in Guernsey and east of Jersey. One article told of a Guernsey ox five years old, which dressed, made 1218 pounds of meat, Guernsey weight; this was on grass, no oil cake, etc. The cattle on the island of Sark are a mixture of various breeds. Instances were cited of yields of thirty-six quarts of milk per day and eighteen pounds of butter, which in American weight would be more. Three years was considered too long to allow a heifer to run before calving, as the milk qualities were likely to give way to fat; two years was considered better.

It was decided that Judge Biddle and Willis P. Hazard be appointed to select such parts of the papers as they deemed proper and have them published; the Association to bear the expense.

Silas Betts read a well-written article on the subject chosen for discussion at the meeting: "What are the qualities or characteristics of the best Guernsey cow, and what are the most serious defects of the average Guernsey; and how should we breed so as to perpetuate the good qualities and eliminate the defects?" He said it was a common practice among the breeders of Short Horns, Devons, etc., to breed to bulls of no particular type or record; while among Jersey breeders the prevailing system is to breed to bulls of the best strains, or such in fancy points; that the Guernsey cow possesses as many points as the Jersey cow ever had; there were fewer instances of phenomenal records, as there was so little effort made to bring about such results; it was a point to decide, how to breed that such might be accomplished. Guernseys have traveled thus far without puffing, in other words on their own merits.

There was very little time to discuss the subject further, as the session had been long already.

After dinner the herd of Guernseys was examined, first the heifers and calves, and in the stable was a long row of well-developed cows, many of them imported. These are the cows whose milk causes the city milk-men to talk so much about being "doctored up."

Shortly before leaving, an informal meeting was held, and William M. Paul, of Moorestown, N. J., and Isaac W. Nicholson, of Camden, N. J., were elected members of the Association; the next meeting to be held at the home of Thomas M. Harvey & Son, West Grove, Seventh Month 25th. Subject for discussion: "Previous impregnation and the effect of crossing."

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Seventh Month 25th, 1884.

The Guernsey Breeders' Association met Seventh Month 25th, 1884, at invitation of Thomas M. Harvey & Son, in West Grove Hall. The meeting was called to order by the President; after reading and adopting the minutes of last meeting, the following were nominated for membership, viz: Joseph G. Williams, Henry Marshall, Isaac C. Evans, R. J. C. Walker, Joseph Evans, and Anthony Higgins. An article in the By-Laws was suspended, and they were unanimously elected members.

The Constitution and By-Laws were brought up by the Executive Committee for revision preparatory to printing. After considerable discussion a satisfactory form of each was framed, and the Secretary authorized to have one thousand copies printed for distribution.

A letter was read from John S. Perry of Albany, N. Y., who had lost a number of valuable Guernseys from an unexplained cause. The symptoms were stated as plainly as possible, but as no gentleman present was able to attribute a satisfactory cause, S. C. Kent was appointed to forward the letter to Dr. F. S. Bridge for his judgment.

R. H. Hodgson then read an excellent article, setting forth his reasons for keeping Guernseys. His convictions were to the point; he had tried the Durham, and they were too beefy, and the Jersey and they were too delicate, then seeing a Guernsey, he changed again, and is satisfied to keep them.

Thomas M. Harvey then read an exhaustive essay on the subject for discussion, relative to previous impregnation and the effect of crossing. He commenced in plant life, coming gradually up, giving numerous instances of interest of previous contact and their effect afterwards on subsequent life. After citing cases of similar

character in the brute creation, the human family was treated, showing numerous cases of interest.

This article was followed by one written by E. Michener, of New Garden, Pa., very much the same in point of argument, which served but to confirm the other.

THE EFFECT OF PREVIOUS IMPREGNATION ON FUTURE PROGENY.

"This seems to be an unsettled question among the doctors, and sometimes stockmen; but enough is known to enable me to advise breeders who desire fine stock to be very careful about the quality and characteristics of the males they use. In the works of creation there is a wise provision to perpetuate the species, and this generally by male and female. The combination is generally expected to produce about an average of the make-up and qualities of the two parents; but there are many curious exceptions, showing that the male is not only the sire of the present fœtus, but in some mysterious way effects the mother, so that the next and future progeny may have considerable resemblance to the former sire, even when begotten by another parent. I might quote many authors, but will be economical of your time. Manly Miles, M. D., in his valuable work on stock breeding says: 'The influence of the male in the process of procreation is not limited to his immediate offspring, but extends also through the female that he has impregnated to her offspring by another male. Paradoxical as this statement may appear, there are many well-authenticated cases on record that cannot be satisfactorily explained on any other hypothesis.' The close observing and talented Darwin remarks on this subject: 'Many well-authenticated facts have been published, and others have been communicated to me, plainly showing the influence of the first male on the progeny subsequently born by the mother to other males.'

"In order to prepare the mind for this subject, I propose taking you a little round in the vegetable world, and show some effect of mixing not so easily explained. In our nursery experience we take a lot of apple stocks all as nearly alike as possible, graft some of them with Caleb apples, and the trees when grown will generally have one main large tap root, and very small side roots. Graft another lot of them with Smoke House, and the roots start near the surface strong and spreading, and no particular tap root. Each variety seems to have some power to shape its own roots, as well as to have its peculiar form of growth.

"Another: We take a common Ash tree, with green entire foliage, and put a graft in the top of it, of a variegated Ash, when

the graft grows the stock or body will put out shoots of variegated foliage, where before grafting, they were green.

"With Potatoes: Take a pure white potato, cut out a conical piece at an eye and then destroy all the other eyes, then from a pure red potato cut out a neat cone, with an eye in it, and fit it neatly into the conical cavity in the white one, tie it or pin it in place and plant; the progeny will be a calicoed, splotched, red and white potato. I have done this and planted the progeny for several years, and they continue to retain the variegated appearance.

"A gardener in Florence had in 1644, a grafted tree of the orange family, the graft was destroyed, and a shoot sprang up from the stock. This new shoot produced at the same time leaves, flowers and fruit identical with the bitter orange, and with the citron of Florence, and likewise compound fruit, with the two kinds blended together both externally and internally. This tree is propagated by cuttings and retains its diversified character.

"The foregoing are instances of mixture without the immediate influence of parents. Nearly all plants have stamens and pistils, male and female organs whose offices are to perfect the seed for the perpetuation of their kind. When a tree or plant is entirely by itself, we may reasonably expect a uniformity of product; but the pollen, the male element, is light and is wafted on the winds, and may be carried by the bee seeking honey to the other plants of the same natural family, and not only change the character of the seed for the propagation of the next crop, but also often changes the character of the present product, and sometimes we see the character of the mother plant modified by it, which somewhat illustrates the subject of my discourse.

"In the proceedings of the American Pomological Society, held at Philadelphia last autumn, was brought out the information that it made a great difference in the size, appearance and quality of certain strawberries, according to what they were fertilized by. To illustrate: Manchester, when fertilized by Sharpless or Charles Downing, was much finer than when by Wilson. We well know that the seed of such crossed plants will produce a great variety of plants when grown, but how or why carrying these hybrid seeds should affect the edible part is not so easily explained. It is somewhat of the character of the mother, being affected by carrying the foetus. The edible part of the strawberry is not a true fruit, in the botanical sense. The pericarp of the apple, pear and other fruit may be affected in the same way. Two very different kinds of apple trees grown close together, have been known to bear fruit resembling each other on the limbs adjoining. Any farmer knows that if he plants his squashes, pumpkins, and melons near together, that it not only affects the seed for the future, but the direct fruit is spoiled for use. With the corn family the mixture of pollen tells on the present crop. We can by management have various kinds of corn all grown on one cob.

"We will not detain you longer in examining the vegetable pro-

duction, only for the case of potatoes mixing in the hill. This question is only discussed in the agricultural papers, never satisfactorily explained, is disbelieved, repudiated and dismissed. We think there is a rational explanation, and it bears closely on our subject—the influence of the fœtus on the mother. First, is it so? do they mix? I say they do under certain circumstances, and I am glad to have the support of such able and talented men as the late William Jackson, the present Dr. Ezra Michener, and Dr. J. K. Eshleman, and others. The condition is that they, the two varieties, must bloom at the same time, and be placed in close proximity, and to make it more easily observable, a red and white variety should be used. The plants that become ferlilized by each other will produce red and white potatoes—mixed colors.

"The potato is not a seed, and is not affected directly by the pollen. The potato plant does produce seed, and when we plant that seed a great variety is produced. I once raised some forty seedlings from the seed of Early Rose, and no two of them were alike. While the mother plant is carrying and maturing this embryo seed she is at the same time depositing in the ground a tuber, the edible potato. Growth is made and secretions formed by the blood and sap carrying and depositing the material. It is admitted by all that the seed in the potato apple can be hybrid, and in that condition can deposit mixed tubers in the ground.

"From the few examples given, I hope you can see how this mixing can be accomplished, and in it a striking example of how in the animal the mother carrying the fœtus can herself become a hybrid. Darwin, after citing numerous instances in the vegetable kingdom to show the direct action of the male element on the mother form, comes to the conclusion 'that the male element not only affects, in accordance with its proper function, the germ, but the surrounding tissues of the mother plant.'

"As we now approach the animal kingdom, I quote from Prof. Agassiz; after his numerous experiments he says: 'I have satisfied myself of it to be the truth, that the act of fecundation is not an act which is limited in its effects, but that it is an act which affects the whole system, the sexual system especially, the ovary to be impregnated hereafter is so modified by the first act that later impregnations do not efface the first impression.'

"I will quote a very few cases, apparently well authenticated, to illustrate our subject: G. A. Baxter, M. D., of Chattanooga, Georgia, gives an instance of a white English bull bitch, which by chance took a dog of different species, 'though he ever afterwards tried to preserve the white breed pure from her, she continued until her death, with every litter, to bear one or two yellow pups.' Prof. Agassiz states that he experimented with a Newfoundland bitch by coupling her with a water dog, and the progeny were partly water dog and partly Newfoundland, and the remainder a mixture of both. Future connections of the same bitch with a greyhound produced a similar litter, with hardly a trace of greyhound. And the same author had bred rabbits with the laws estab-

lished by this experiment, and had at last so impregnated a white rabbit, that connection of this white rabbit with a black male invariably produced gray. Dr. Shaw, of Leochel-Cushme, put six pure horned and black-faced sheep to a white-faced hornless Leicester ram, and others of his flock to a dun-faced Down ram. The produce were crosses between the two. In the following year they were put to a ram of their breed, also pure. All the lambs were hornless and had brown faces. Another year he again put them to a pure bred horned and black-faced ram. There was a smaller proportion this year impure; but two of the produce were polled; one dun-faced, with very small horns; and three were white-faced, showing the partial influence of the cross even to the third year.'

"Dr. Miles visited the farm of A. N. Gillette, in Delta, Michigan, where he saw a litter of pigs out of a pure Berkshire sow, and got by a pure Berkshire boar. More than one-half the pigs were apparently Poland China in the form of the head, and their bodies were spotted with sandy white. He was informed by the owner that the preceeding year the dam of these pigs had produced a litter of pigs by a Poland China boar that were marked in the same manner, with sandy white spots.

"Dr. H. B. Shank, of Lansing, Michigan, reports of a pure bred Aberdeenshire heifer that was served with a pure Teeswater bull, by which she had a first cross calf. The following season the same cow was served with a pure Aberdeenshire bull; the produce was a cross calf, which, when two years old had very large horns, the parents being both polled, (muleys).

"When I first visited Judge Biddle's herd, at Andalusia, some sixteen years ago, I saw there a fine Guernsey cow without horns, a muley. This excited my curiosity, as I had not heard of any muleys among Channel Island cattle before. Upon inquiry I learned the history of her, about thus: The Biddle (first) importation consisted of three cows only, no bull; in this extremity they were compelled to let one of them (Jennie Dean, I think) be served by a neighbor's muley scrub bull, not anything strange that the calf came to be a muley. But to illustrate our subject, the same cow, in after years, when served by a thoroughbred Guernsey bull, having horns, produced some calves without horns, clearly showing how she had been affected by the muley scrub. [See our Guernsey herd book No. 8. Muley was the dam of No. 10 cow June, the muley I saw].

"In a letter from Judge Biddle, received last week, he says that my statements that I had referred to him were about correct, and they are as detailed above. He also informs us that Prof. Gibson on examining this case, said he saw no muleys on the Island of Guernsey, and our neighbor, S. C. Kent, reports the same.

"Alexander Morrison, of Bognie, had a fine Clydesdale mare, which, in 1843, was served by a Spanish ass and produced a mule. She afterwards had a colt by a horse, which bore a very marked likeness to a mule, seen at a distance, every one set it down at once as a mule. The ears are nine and a half inches long, the girth

not quite six feet, and stands above sixteen hands high. The hoofs are so long and narrow that there is a difficulty in shoeing them, and the tail is thin and scanty.

"A similar case is recorded by Dr. Burgess, of Dedham, Massachusetts, who says: 'From a mare which had once been served by a jack I have seen a colt so long eared, sharp backed, and rat-tailed, that I stopped a second time to see if it were not a mule.'

"Dr. H. B. Shank, of Lansing, Michigan, informs that a mare belonging to himself, having produced a mule, was afterwards bred to a Morgan stallion with remarkably fine ears; the ears of the colt were large and coarse, presenting a close resemblance to those of a mule.

"In 1815, a chestnut mare, seven-eighths Arabian, belonging to the Earl of Morton, was covered by a Quagga (a species of striped zebra); the hybrid produce resembled the sire in color and in many peculiarities of form. In 1817, 1818, and 1821, the same mare was covered by a very fine black Arabian horse, and produced successively three foals, and she had not seen the Quagga since 1816, they all bore his curious and unequivocal markings.

"In the human family the same peculiarity has been observed. A woman may have by a second husband children who resemble her former husband, particularly by the color of their hair and eyes. A white woman who has had children by a colored man, may afterwards have children to a white man, and these latter children show some unmistakable peculiarity of the negro. Our local M. D. can bear evidence to this, and also that the mother shows signs of contamination. M. B. Hickman, of West Chester, told me of an Irish woman that had lived in his family, and who afterwards married a colored man and had by him some eight or nine children, and by that time had become quite a mulatto in color and appearance.

"In addition to what has been related of color, form, etc., diseases may be communicated in this way. Tuberculosis exists somewhat among cattle. A male affected that way not only transmits it to progeny but also to the mother, and she, by other sires and healthy ones, may transmit to other progeny. We have known instances of the man being affected with scrofula, married an apparently healthy woman, reared two or three children, they, of course, might inherit the disease, but there are instances of this kind where the mother became affected with the disease of the father and died, while the man still lived.

"In his remarks upon this subject, Dr. Carpenter says: 'Some of these cases appear referable to the strong mental impression left by the first male parent on the female, but there are others which seem to render it more likely that the blood of the female has imbibed from that of the fœtus, through the placental circulation, some of the attributes the latter has derived from its male parent, and that the female may communicate these, with those proper to herself, to the subsequent offspring of a different male parentage.'

"James McGillvray, a veterinary surgeon of Huntley, presents essentially the same theory, as he believes, that when a female of

any pure breed has been impregnated by a male of another breed, she becomes a cross, 'the purity of her blood being lost in consequence of her connection with the foreign animal.'

"When we consider how the embryo is nourished and built up by the mother's blood, and that blood after depositing its building up element has to return from the hybrid fœtus through the mother's circulation, to be purified and again stocked up, to return with more for the same purpose, it does not seem any more difficult to understand than many of the changes that I have related to you, and so readily observed in the plant world."

After dinner, another short session was held. Willis P. Hazard read a preliminary article, prepared for publication in the "Country Gentleman," as an introduction for the papers to be prepared by himself together with Judge Biddle; it embraced many points of interest, giving some statistics. There was but little time for further discussion, as the Green Bank herd of Guernseys were yet to be seen, and the afternoon was already well spent.

After viewing the animals, buildings, etc., the assemblage parted, to meet Eighth Month 15th at the home of Ezra Michener, Carversville, Pa. Subject for discussion: "What are the qualities or characteristics of the best Guernsey cow, etc., and what are the most serious defects of the average Guernsey, and how shall we breed to perpetuate the good qualities and eliminate the defects?"

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eighth Month 15th, 1884.

The Guernsey Breeders' Association met Eighth Month 15th, 1884, at the home of Ezra Michener, Carversville, Pa., according to appointment.

A number of calves from two valuable herds belonging to S. C. Kent and Henry Palmer had died after a short illness. The symptoms were given and the subject discussed at some length. The calves were sick about four hours, frothed at the mouth, running around about a half hour before death, piteously bawling, evidently in great pain; the bowels were not constipated. The head was turned to the right side, the pulse very high. Dr. Michener thought it was poison of the nervous system. John C. Higgins that it was inflammation of the stomach, a reflex action of the stomach on the

brain ; he made some comparisons in cases of dogs. Ezra Michener read an essay on the merits and defects of Guernsey cows ; he also produced a well-written article on the subject, Why he bred Guernseys.

R. H. Hodgson thought it very important to go and see a bull before buying, though it cost the price of the bull ; and that he should be made to work like a horse. W. P. Hazard said the animals on the island of Guernsey had been very much inbred, and that cheapness of service was too often the case. He said that cows to procreate the race properly should be very well bred. In nature the mammary glands of a cow are insignificant ; by careful breeding and good feeding, we arrive at good if not remarkable results. There have been too many cows brought over merely as a mercantile transaction, and which are in a great measure devoid of the qualities to be desired in a good Guernsey cow.

Thomas M. Harvey thought the Guernseys such persistent milkers that in the long run they yielded as much as the other breeds.

Isaac Evans, Charles S. Carter, and Isaac Nicholson were appointed a committee to examine the Guernseys at the State Fair and report to this Association which animals they thought superior.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Tenth Month 17th, 1884.

The Guernsey Breeders' Association met Tenth Month 17th, 1884, at the home of Henry Palmer, with George Blight in the chair.

After reading and adopting the minutes of last meeting, held at E. Michener's, A. J. Cassat, Russel S. Cox, and Samuel D. Hughes were nominated for membership. It was decided to hold the next meeting at the home of Alexander Scott, Concord, Eleventh Month 14th.

As new business, Thomas M. Harvey vished to know more about the properties of cotton seed meal ; whether it was safe to feed to high-bred breeding stock. Alexander Scott stated he bought, he thought, the first cotton-seed meal brought to Philadelphia ; that it was before the war. It was not hulled, and had to be

sifted; he was satisfied as to its value as a food, and bought after the war as soon as possible, and has used it ever since. He feeds one pint of it at a feed—being in proportion eight quarts of bran, two quarts of cornmeal, and one pint cotton-seed meal, mixed with cut hay and fodder; he also feeds some long hay afterwards.

J. William Cox uses one-eighth cotton-seed, using cob meal and bran as the main feed; three parts cob, four bran, and one cotton-seed. Joseph Evans stated that he had been using cotton-seed meal for years, and was well satisfied; he told of a person who abandoned it, whose milk-man noticed a deterioration in the quality of his milk; upon resuming the feed, the trouble ceased.

William Cox said that Edward Darlington (a neighbor of his) used two quarts of this rich meal per day, and had no abortions; his cows averaged 250 pounds of butter apiece per year. William Paul did not feed it and feared abortion.

Willis P. Hazard stated that the Georgia Experiment Station found that the meal was worth $26 per ton to Georgia farmers as food, though it was necessary to have it thoroughly decorticated. The hull and more particularly the root of the cotton plant contains a substance, Gossipium, which causes the uterus to contract and evict the contents of the womb.

It appeared to be the general decision of the club that were the hull properly removed, cotton-seed meal was not injurious to breeding stock if fed in moderate quantities.

The subject proper for the discussion of the day was now entered upon, relative to the cause of mortality among our calves.

Henry Palmer made some general remarks, giving symptoms. Dr. R. B. Ewing, who had been witness to one of Palmer's cases, thought at the time it was a case of metallic poisoning; eggs and milk and hydrate sesque-oxide of iron were administered; the calf died, and upon examination no signs of poisoning were found.

In another fatal case, the brain and stomach were sent to Dr. Martin of West Chester. He pronounced it heat stroke, or Thermic Fever, caused by excessively hot weather then prevalent. The brain was affected in each case. The remedy recommended was a cold application to the head, and the following: Bromide of Potassium, Chalk Mixture to correct the acidity of the stomach, and aconite to sooth and quiet the nerves, and possibly bleeding. Henry Palmer said that the chalk reduced the temperature; that in one case the pulse was 200 and the temperature 110°; the latter was reduced to 107° in a half hour by chalk.

S. C. Kent stated that the animals belonging to John S. Perry whose letter was read at a previous meeting, died in very cold weather ; and other cases were reported likewise. Dr. Ewing said that meningitis did not necessarily occur in hot weather. Ezra Michener lost a cow some time since apparently from partaking of salt in excessive quantities—over a quart, he thought, was taken ; she had not had access to salt previously.

A motion for adjournment was now carried, and dinner was announced, after which the time was spent in viewing the fine herd of Guernseys and the superior buildings on the premises.

The food subject being of such importance, it was decided to continue its discussion at our next meeting.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eleventh Month 14th, 1884.

At a regular meeting of the Guernsey Breeders' Association held at Alexander Scott's home Eleventh Month 14th, 1884.

After reading and adopting the minutes of last meeting, A. J. Cassat, Russel S. Cox, and Samuel D. Hughes were elected members of the Association.

Thomas M. Harvey then read an instructive essay on the Guernsey cow, telling of the early importations, and how, after trying to produce a cross to make a general purpose cow, he was taken to the Guernseys and there saw what he had been looking for. He then also brought up the subject of Herd Book registration, complaining of the indifference of the American Guernsey Cattle Club to a matter of such importance. He thought we should uphold the Herd Book of the Royal Agricultural Society on the Island of Guernsey, which registers on individual merit ; holding local shows frequently, that all might have a chance to compete for its prizes. He exposed the loose system of the Island of Guernsey General Herd Book, which registers almost any kind of an animal that happens to be on the island.

The subject opened some discussion. Willis P. Hazard confirmed what had been said, and thought however that we were improving, and that within five years Guernseys would materially advance.

The Secretary read a report of P. E. Sharpless forty quarts of A. Scott's Guernsey milk skimmed with a separator; it made eight pounds and one ounce of butter weighed out in pound pieces.

The subject of analysis of Guernsey milk and butter was next opened. Prof. Cochran, chemist of West Chester Normal School, was present and offered his services. Thomas M. Harvey, Alexander Scott, and Henry Palmer were appointed to attend to the matter. Prof. Cochran said that Friesian milk was poorer than that of native cattle. There is considerable difference in percentages, depending on the condition of the cow, whether fresh or nearly dry. A case was cited of Jersey milk which yielded eleven quarts of milk per day, which made 19.49 per cent. solids. Silas Betts thought owners of Guernseys were too modest in making them known. He thought we should take a step in advance of the Herd Book, by analyzing milk, and that we should test the cow. R. H. Hodgson thought we had advanced. It was necessary to put the matter before the public to get them to adopt Guernseys; when they have the milk and butter, they will not give them up; and it was necessary to put our proceedings before the public.

Thomas M. Harvey read an article on Scours in calves, from the "American Farmer."

It was decided to hold the next meeting at the Philadelphia room, 344 South Third Street, Twelfth Month 19th, to discuss "What constitutes a first-class Guernsey bull, and the proper management of bulls." Silas Betts was appointed to open the subject.

The committee appointed some months ago to examine and report upon the State Fair Guernseys were not ready to report.

Alexander Scott said that when a cow calves he gives a mash of bran with a tablespoonful of salt petre, some salt, and a handful of hickory ashes; more salt petre if any symptoms of milk-fever occurred. He used a hot lye poultice back of horns, or soap and salt when a cow was dull. He did not think there should be milk-fever if proper care was used. Dr. Darlington thought milk-fever was a sort of double action—the head and womb; the nutrition leaving the womb at the time of parturition is apt to go to the brain and occasion apoplexy. Silas Betts gave for milk-fever twenty drops of aconite and belladona alternately in one pint of water. He uses many of the Cashaw pumpkins for his cows and they are very fond of them. He also uses barley sprouts; thought brewers' grains were hard on cattle. For calves, ground oats, flaxseed-meal, and wheat middlings were given as a gruel, by some members of the Club, with very good results.

Cornfodder and sorghum as food were discussed. The former, if grown thickly, is about as good as timothy hay—so says the New Jersey Experiment Station. It was thought of decided advantage to feed bran with cornmeal, the results of the mixture were as good as though pure cornmeal was fed. The latter is solid and tends to pack on the stomach.

Adjourned to meet in Philadelphia.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 20th, 1885.

The annual meeting of the Guernsey Breeders' Association was held in the Philadelphia Agricultural Society room on Monday, January 20th, 1885, President Henry Palmer in the chair. The minutes were read and approved. The following were nominated for membership: S. P. Taber Willets, Roslyn, L. I., New York; J. W. Fuller, Catasauqua, Pa.; Abbott Fuller, Philadelphia, Pa.; Spencer Borden, Fall River, Mass.

The officers for the ensuing year were elected as follows: President, Henry Palmer; vice-Presidents, George Blight and Ezra Michener; Secretary, Willis P. Hazard; Treasurer, Samuel C. Kent; Executive Committee, Henry Palmer, George Blight, Ezra Michener, W. P. Hazard, S. C. Kent, F. M. Etting, Silas Betts, and John C. Higgins.

Reports of committees being next in order, the Committee on Publication, through chairman Betts, reported that they had several meetings and considered the proposals before them—one from Rev. Sleeper, and the other from W. P. Hazard. The latter one being the cheaper of the two, the form proposed more desirable, and editorship secured without additional cost, they unanimously recommended its adoption. Mr. Hazard being called upon, stated the substance of his proposition, viz.: that he would publish monthly for one year a magazine of twelve pages quarto, including the cover, printed in the best manner, containing the monthly reports of the action of the Association, together with original matter, provided the Association would assume and contribute to the expense of said publication the sum of three hundred dollars. He further stated that the cost of publishing such a magazine would certainly

be from four hundred to four hundred and fifty dollars; but that he would assume the risk of reimbursing himself from the proceeds of subscriptions and advertisements.

After a full discussion of the proposition and explanation from Mr. Hazard, the recommendations of the committee were adopted unanimously, and those present subscribed the sums set down to their names, to be paid in full, if necessary, or a ratable proportion with other subscriptions that may hereafter be received from those not present. [Subscription list follows.]

The Committee on Milk reported that progress was being made, that a number of samples had been sent to Analyst Cochran, and they were not ready yet to report; but would state it had been proven that Guernsey skim milk still retained 1.37 per cent. of fat even after close skimming, showing a great body and a richness, making it valuable for use.

An invitation of Commissioner Loring to send a delegate to a meeting of Agriculturists, to take place at New Orleans February 10th was accepted; delegate to be any member attending the New Orleans Exposition at that date.

The subject for discussion for the day was opened by an able paper by John C. Higgins, on "Testing Cows and how they should be made." This presented some new views, inviting discussion; it will be printed in the February number of the "Journal." This was followed by the article on "Testing Cows" by W. P. Hazard, and which he supplemented by some rules how tests should be made—first as to the feeding for it, and should not some rule be adopted, perhaps to be guided by the weights of animals to be tested, and to feed so much for every one hundred pounds. Second, the mode of setting, time of skimming, and whether whole milk should not be churned. Third, as to the season, whether on grass or dry food, the period of gestation, and the age of the animal.

The Secretary read the rules of the Guernsey Club. Mr. Michener spoke of the feeding of milk to cows as having an important bearing upon tests, and that it ought not to be done or allowed, but just what food was given should be reported.

Thomas M. Harvey said before we begin to test we should know how to separate better. He thought there was more butter or fat in the cubic inch of Guernsey butter than any other. It is needed that we should find out more about the cause of color in butter. It is well known that Jersey butter will lose its color in winter, and that Guernsey butter will not; the latter is richer and worth more chemically.

Silas Betts said his experience was that his Jersey butter would fall off in color in winter, and that was one reason for adopting the Guernsey, for he found the latter would hold its color in winter and all the time. He had to color his Jersey butter, just as all other owners of Jerseys do, but never his Guernsey butter; also that the latter gave more on the same feed. He then showed a pound of butter from Guernsey grades made by I. H. Hinchman, of Merchantville, N. J. He fed his three Jersey and fifteen Guernsey grades daily rations of eight quarts 9-20 cornmeal, 5-20 brown middlings, and 6-20 coarse bran, mixed; also eight pounds clover hay and two bushels of cut fodder. This is feeding for milking exclusively. In the last seven days he has shipped 560 pounds of milk and churned 311 pounds of butter from the surplus of unsold milk from these eighteen cows; three of which are heifers with their first calves, and seven, more than half milked out their season. He knows more liberal treatment would produce better results.

Henry Palmer reported tests of his milk, showing a variation of many degrees of per cent. Fifteen per cent. of cream rose on that first drawn from the cow; thirty-two per cent. from that taken at middle of milking, and sixty-four per cent. on the strippings; all were set in ice water.

Subject for next meeting: "How shall we best promote regular breeding, and prevent barrenness in cows?" Discussion to be opened by Thomas M. Harvey.

W. P. HAZARD, Secretary.

Minutes of Meeting held Second Month 15th, 1885.

The Guernsey Breeders' Association met at their rooms Friday, February 15th, 1885. A good attendance.

At the opening of the meeting, the Secretary was directed to cast the ballots electing Messrs. Willets, J. W. Fuller, A. Fuller, and S. Borden. Committee on Milk reported no progress was being made on testing milk. Mr. Betts alluded to the London Dairy Show report on milk, and the breeds ranked thus: Guernsey, Jersey, Shorthorn, and Holstein—the last was the lowest; though it gave the most milk, it was too poor to sell under the law. The Secretary read E. Michener's yields of his cows, ranging from 5,709 pounds to 7,370 pounds for pure bred, and from 5,194 pounds to

6,389 pounds for grades for a year, thus showing what a farmer's herd of Guernsey stock is doing every year.

HEALTH CERTIFICATES.

Alexander Scott brought up an important subject, that of driving cattle through the country to be sold; he thought a law should be passed that no public sales of stock should be held unless every head had a veterinary certificate of good health. This was seconded by Mr. Hazard, who said that Herkness & Co. were obliged to give a clean bill of health to every animal they sold at public sale, and it would be no more hardship for the country dealer to do the same.

There ensued an animated discussion on this and pleuro-pneumonia, but the general view was against the possibility of carrying out such a law. The discussion resulted in appointing a committee on contagious diseases to take this subject in hand. The President, Secretary, and George Blight were appointed.

The question for discussion for the day, "How shall we best promote regular breeding, and prevent barrenness in cows?" was opened by Thomas M. Harvey, who gave some very interesting facts from his experiences. He commenced by saying that reproduction was most likely in all cases, either by seed or eggs, if we could know the mysteries of every branch of nature; all that is positively known in every case is that two sexes are required. He reviewed the vegetable world which is under the observation of all, and compared too vigorous vegetables or fruit trees with a too vigorous heifer. If too vigorous, plants will not set much fruit; it seems that growth checks fertilization. If a pear tree is not bearing and we cut the roots or bark, it will go to fruiting. Thus heifers, if too vigorous, will not breed. He described the generative parts, and showed how the passage into the womb may be sometimes stopped up; in the case of a heifer not breeding until she was three years old, he had forced open the passage while she was in heat and immediately copulated her with the bull, and is in hopes now she will breed. He tried another by swelling the neck vein, and bled her on each side, took a bucketful from each, and had her to catch after it.

Externally we see the vulva; by putting the hand in we come to the vagina, then to womb or uterus; across this is a conical protuberance; until the two come together the heifer cannot produce. This os uteri must be displaced; heat does this, and the womb is opened and the male semen is deposited. At the ex-

tremity of the womb it is biped, or there are two horns leading up to the fallopian tubes connecting with the ovaries. Here eggs are constantly maturing, the mouths of the tubes catch the egg when ripened and convey it to the womb to be fructified. The ovaries are suspended under the kidneys. The bull's elements sometimes reach the ovaries. These parts may become diseased; inflammation may take place and the fœtus is dispelled. He narrated cases where the vitality was lost and a fungus had grown there. He had a heifer whose time was out; he turned her dry, her time came, but no calf; she afterwards came in heat, was served, but proved unfruitful. He then beefed her, and upon killing her found that the fœtus had died and dried up like a mummy. Thought it was very necessary to watch after our cows when near calving; this one might have been ready to calve, but no one was near to help her.

Other Breeding Defects.

There are other drawbacks often met with, not only of failure of delivery, but of false presentation and other defects, and he spoke of modes of overcoming these troubles. He gave cases of false presentation, where he had to take the calf away in pieces; the parts were born and sterility produced. But in other cases he pushed back the fœtus, changed its position, and though the cow had tried and failed, with assistance she had a fine bull calf, which was now living. He had so many cases conflicting with the theory of alternate sexes, or ability to produce either, that he had no faith in it.

The Placenta.

The signs of calving are indicated by the swelling of the cords alongside the tail; the vulva will swell and go back again, especially in heifers. If the placenta is slow in coming away after calving it should be removed, especially after abortion. This is done by inserting the arm, separating the numerous cotyledons and removing all in a bunch; it is harder to do this on an old cow than a young one. Had tried weights attached to the placenta in dilatory cases, but they don't always prove good. One cause of cows not getting in calf is, they will sometimes strain and evict the male semen.

R. H. Hodgson said the use of bleeding is that it relaxes the system. He don't think a cow with the secretions dry will live with dead calf in her of full size. There are little knots on placenta, if healthy, like little burrs, or knots that will split, and, upon detaching these, the placenta will come away easily.

Thomas M. Harvey, on removing the placenta, puts in the right hand; the womb has all over it cotyledons—these are what are to be separated to draw out the placenta. Do each one separately, and then have the placenta in a loose bunch and draw it out. He could not always get it all away, as in a big cow it reaches up too far for the length of the arm.

Mr. Hodgson—If the cow calves naturally and the placenta comes away, all is right and nice, but if it hangs out and will not come away, it is very bad to leave it, as it rots and smells. T. M. Harvey thinks abortion is contagious, and sometimes caused by a bull. Alexander Scott thought it never was.

Thomas M. Harvey—Degeneration of the ovaries he was not competent to treat of. He might give relaxing medicine, such as belladonna. Keeping her away from the bull for a time will sometimes induce her to take hold. Another one suggested some extract of tobacco. Joseph Pyle had never missed his cows casting placenta, by putting blanket on her and given warm mash of bran.

George Blight thought if breeders would study the Guenon system more, they would not find these breeding troubles in the higher classed escutcheons, those of the first and second classes and orders, but they would be very likely to do so in all below the third order. A heifer born in the fifth order will hardly ever breed right, for she is malformed and does not show any good marks.

A solution of carbolic acid and tepid water as an injection, having been suggested to help the ejection of the placenta, J. C. Higgins, thought carbolic acid was poisonous and not very proper to handle with a cut or break; but when refined and deodorized and rendered soluble, it has no poison whatever. Would not use caustic soda; carbolic acid diluted will kill parasitic life, or act as disinfectant, and is very valuable. A very little in a bucket of water will color the water like milk; 25 parts to 100 of water would be very strong; 1 to 100 is attenuated, but is still valuable. Both he and Alexander Scott praised Little's chemical dip, as did others.

FREE-MARTINS.

Mr. Betts said that he had Free-martins that were breeding. Alexander Scott has one that he thinks is. Ezra Michener breeds heifers so as to have them come in at two years old; he does not feed and breed so they will get fat and look beefy; such make more uncertain breeders. Silas Betts don't breed as though he was growing Short-horns. Fatted calves did not turn out well with him, while a scrawny bull calf will often turn out the best working animal. We

want to give the Guenon marks on tendency to beef ; some try to make them so handsome and so make them fat ; some of his had proved fat beefy cows, and proved inferior. The Guernsey is easily fattened on less feed than any other animal I ever owned of other breeds. Over-feeding would produce beef instead of milk—same as on Short-horns. When in calf then you may and should increase the feed. The danger is in giving them too much before they breed. Bulls fed moderately will not get too heavy. New buyers should not seek the fat and heavy animals. He had sold two heifers and a bull to Virginia ; these heifers averaged 950 pounds at two years old, and the owner had to put them on poor feed and grass to keep them back.

On Sterility.

Thomas M. Harvey said that in the West (in Iowa) cattle were put on public land ; the scrub bulls were at large and vigorous. They all agreed to keep up their bulls and it made them sterile ; they must have some exercise, even work.

Management of Bulls.

Isaac Nicholson said that if bulls were kept up all the time, after awhile they will not be certain as calf-getters. It confined, bulls are not sure after three years old. If you have a two year and one year, together, they will not try to get into other pastures, and are not so fierce. The best age to ring a bull is at one year old, and they may be allowed to begin to serve then. Young bulls are more sure than older ones. He had given to cows, tincture of ergot after they had calved, to expel the placenta ; a tablespoonful in a pint of water, divided into three or four doses, and given, say, every six hours.

Silas Betts—You may give tincture of pulsatilla, ten drops two or three times. Alexander Scott spoke of the price of bulls. What is a good one worth ? One says they are worth $25, and another $500. He thought young bulls not the best ; an old bull is a great deal the best. A good bull is worth any sum you choose to ask, and a poor one is worth nothing or less. They should be handled when young, and broken single or double alongside an old ox.

White or Dark Noses.

John C. Higgins inquired if the distinction between white and dark noses should be countenanced. Mr. Betts thought it ought to be put down and no attention paid to it, and as an Associa-

tion we should not recognize it. Messrs. Blight, Hazard, Palmer, and others thought no attention should be paid to the color of the nose. The latter stated he should breed to one he was raising, with a dark nose. Mr. Hazard said it was not in the scale of points in either Herd Books, and was given no thought in Guernsey.

The subject for discussion for next meeting was to be "The Guernsey scale of points as indicative of a first-class animal considered." George Blight was appointed to open the discussion.

W. P. HAZARD, Secretary.

Minutes of Meeting held Third Month 13th, 1885.

The Guernsey Breeders' Association met at their rooms on Friday, March 13th, 1885. Thomas Sharpless was proposed for membership.

In allusion to report of previous meeting, it was said that black noses were plenty on the Island, and not disliked by most breeders.

An implement for testing cream, price eight dollars, it was stated was made in New York to test by ether and a water bath; it had been tried at Mr. Fuller's, and it gave the like result three times from the same milk.

J. C. Higgins spoke on pleuro-pneumonia, and of an instance which Dr. Rowland said was a clearly-defined case of it. The cow was eighteen years old; he advised inoculation, that it was harmless; in three or four days after, she would be in normal condition, then for a day or two be drooping, then would continue to be healthy. He inoculates in the tail, and for two years the animal would be protected; it is done by drawing an infected thread through the tail near the end.

Isaac Nicholson cited an instance where forty cows were infected, two died, and it shows it was bad because it was in cold weather. He advised inoculation; the owner got virus and inoculated them; their temperature rose to 105° while they had it. The veterinary said their milk was good at any time while below 103°. When inoculated, others might be introduced into the herd without fear; one heavy in calf, not inoculated, took it and was quite sick. The tail should not get down into the dirt, as there would be danger of its sloughing off. The inoculated would show signs that they had taken it by a rising of their temperature; it made it more of a skin

than a lung disease. He believed they could communicate the disease if inoculated, but only for a short time ; it might affect the manure and barn, but the latter could be disinfected with sulphuric acid. He would not advise inoculation until there was a case in the herd.

E. Michener stated that his father and his brother, in two years past, had inoculated herds in New York, and had exterminated it at Clinton, N. J., for a space within ten miles.

Thomas Harvey alluded to Garret's cattle ; they were now all dead. Exhalations passing up through the hay, infected them. He would not advise inoculation, it brings the virus on the farm. Pleuro could be carried from farm to farm in the clothing. Edward Walters does not think much of the quarantine, as the cattle were turned out in the field and might communicate it to the neighbors' cattle. It was hard on renters of farms. He thought it proper as soon as the stock was healthy, that they should have a right to sell it.

Anthony Higgins spoke of Edgemoor Farm ; they had the disease there in 1883. The barn was fumigated and disinfected, and the cattle removed to another barn. Next year the disease broke out on the Bigger farm, and thence spread. But the Edgemoor farm was clear in 1884; but this winter it broke out again in the barn where it originated, though thoroughly disinfected, and the herdsman thought it was because some must have remained in the barn.

In the discussion, it was thought unjust in the State paying so little, and that law and public opinion should force them to inoculate, and cattle should not be removed from farm Mr. Higgins said the law in Delaware is that they shall be inoculated.

Isaac Nicholson thought there is much danger from the hay being infected. Carbolic acid was good, but was absorbed by the milk and spoiled the taste; in using sulphuric acid, put it into the water and not the water into it; it was the best thing to use. Inoculation should be done at six inches from end of tail, not near the anis, or it would be a bad case. Sulphate of iron was not active enough. Alexander Scott had used Animal Oil, and liked it very much. E. Walter thought Little's Chemical Fluid very good, as did several others.

Mr. Blight read an excellent paper on the subject of discussion for the day: "The Guernsey scale of points as indicative of a first-class animal considered."

Silas Betts liked pedigree as well, if not a little better, than points. He illustrated his preferences by the bull Rioter, 670, an imported bull, and which had sired for him Duchess of Bloomfield, twenty pounds; Su Lu, seventeen pounds fifteen ounces; Lady Bloomfield, fourteen pounds twelve and a half ounces; etc. He discussed and praised the American Guernsey scale, that it gave the most points directly where it was needed—to the udder; it was liberal also to the skin, hair, and escutcheon. While he never cared to buy a cow without a good escutcheon, and always looked to that point; still he was not prepared to go as far as friend Blight in that matter.

An animated discussion followed upon the value of the escutcheon, as being an indication of the qualities of the animal. W. P. Hazard said he had paid much attention to the quirl of the hair on the back, and found it to agree with Mr. Blight's opinion of it, and thought it was a point of value to be always considered. It would generally be found to harmonize with the class of escutcheon on the animal, and the poorer the quirl the lower order of its class of escutcheon the animal would have The farther forward from the exact middle of the length of the animal, as measured from the forehead to the root of the tail, the larger and coarser the quirl, the more likely the animal to have a thick, beefy shoulder and a bad neck, and an imperfect escutcheon, and most likely thick thighs and a small udder; in short, the nearer a beef animal. But nearer the centre of the back, the finer the hair and the smaller the quirl, the more likely the animal to have fine and good points. It is, too, a very good point from which to estimate the quality of the milk, as the smaller and the finer the quirl is, the more likely the quality to be good, though in many cases where it is coarse, and especially on a large vigorous animal, the quantity may be large, but the quality of the milk will be poor.

The differences between some of the members here as to judging from the escutcheon as a standpoint, arise from not judging by Guenon's rules, which asssign ten points for an accurate basis for judging and not the escutcheon only. In fact, the latter may be said to be merely a concentration of outward marks, to be read with a knowledge of what constitutes a good cow; these rules, Guenon is emphatic in detailing.

Mr. Hazard then entered into a comparison between the Island Herd Book scale of points and that of the American Herd Book. The former assigns thirteen points to "quality of milk," the American, thirty points; the Island book, twenty-two points to "quanti-

ty and duration of flow;" the American, forty; the Island, ten points to "size and substance;" the American, sixteen; the Island, fifty-five points to "symmetry;" and the American, fourteen. Thus to the one hundred points in each scale, the American gives to deep yellow color, thirty; skin and hair, ten; escutcheon, ten; milk veins and udder, thirty; or seventy points to the main essentials, and only thirty points to size and conformation. He hoped the excellent points necessary to a good dairy animal would always be maintained by our Guernsey Club as being the best scale of points in existence.

The Jersey breeders were now tinkering with their scale, the Directors having adopted a new one, which was a great falling off in the really meritorious points of the animal, and he feared was being made to suit much of the bad breeding that had crept in. This was being evidenced by the lower prices the Jerseys were bringing at each succeeding sale, only the really good ones maintaining their prices.

The effort should be to elevate the scale and not to depreciate it. Unless the highest standard was maintained up to which to breed, careless breeding would increase. Ezra Michener read the original scale of points he had drawn up as one of the committee, and it seemed excellent. He thought the point "duration of flow," could not be told accurately, as so much depended upon proper feeding and milking. Mr. Blight said though, the points of a good cow could readily be told, and upon this basis could positively be told what she would do when well fed and milked; if she was not properly treated, of course, she would not come up to the mark, but that did not affect the possibility of saying what she could do.

Anthony Higgins valued pedigree very much; he had owned a Laverack setter that was poor in himself, but he was the sire of some most noted dogs; he had inherited good traits.

John C. Higgins narrated a case where, guided by the statements of A. M. Herkness & Co., he had bought a cow selected by Fowler that proved not in calf, and was always coming in season; he killed her, as she had been in that condition for a long time; she made very nice fat beef, and with best marbling, but rather dear eating. Thomas M. Harvey thought we ought always, when killing non-breeders, to dissect and examine them and report what is discovered. He thought we should urge the passage of the law not to sell at public sales without a certificate of health. Anthony Higgins suggested that the Committee of Pleuro-Pneumonia

should report what legislation is needed, examine present laws on contagious diseases, and report what they call for and what is needed.

The following resolution was passed:

Resolved, That the Committee on Pleuro-Pneumonia be and they are hereby instructed to prepare and present to the Legislature any amendments, in their judgment, required to further guard against the spread of contagious diseases. Second, That the committee be requested to report at the next meeting the best steps to take to see that offenders against such laws are prosecuted and the laws enforced.

The subject for next meeting is, "What shall we do with our bull calves," and Exra Michener was appointed to open the discussion.

W. P. HAZARD, Secretary.

Minutes of Meeting held Fourth Month 10th, 1885.

The Association met at their rooms Friday, April 10th, 1885. Thomas Sharpless and A. Wilheim were elected members,

William M. Paul suggested that speakers not members of the Club should occasionally be invited to address the meeting. It was thought it would be attractive to such persons to attend the meetings, that they may see the farm and stock. Adopted.

Ezra Michener read a statement of the work of his herd for the past year, ending April 1st, 1885, as follows: Average number of cows kept, 12½; average per cow of milk, 6,082 pounds; average per cow of butter, 282 pounds; average per cow of money and calves, $121.96. The herd consisted of six thoroughbreds, four grades, and the balance common cows. Four of them were heifers with their first calves, but are reckoned as full cows. No calf in this valuation is placed at a higher figure than fifty dollars, although I have two that five times that amount would not purchase. Had all the cows been Guernseys or grades, I am confident the average would have been fully 300 pounds.

This statement of the working of a farmer's herd, of which the owner is producing the butter for market, was thought to be an excellent one, and that Mr. Michener's estimate of the value of the Guernsey yield was quite correct. To this there was an objection; but Mr. Michener over-ruled this by stating it to be his purpose to have his herd eventually consist of thoroughbreds only, as his daily

handling of the three kinds in his herd convinced him that his revenue would be larger, not only from an increased amount of butter, but from the higher value of the increase of the herd. He found no trouble in selling his pure-bred bulls to his neighbors at good prices, and he always had a larger demand for heifers than he could supply.

Mr. Michener then opened the discussion of the day by reading a paper on "What shall we do with our bull calves?" The subject is one of considerable interest to the large breeders of Guernseys, who have several calves to dispose of in the course of a year. With the small breeders the want of a sale for bull calves is not felt in so great a degree, as the home market absorbs about all there may be for sale. In starting out on this subject, it might be well to commence by breeding fewer bulls, and thus make a corner in the market. There have been a great many theories advanced on this subject by enthusiasts who make up their minds on a certain subject in advance of any practical proof of the same, and blindly follow their beliefs, despite the numerous failures which others can see, while they do not.

The latest theory on this point is that the tendency of each sex is to produce its opposite, and that the result will be governed by whichever parent possesses the greater vitality at the time of conception. While I place no confidence whatever in this theory, or any other with which I am acquainted, I must acknowledge that there is some unalterable law governing the same which will in time be discovered. We will therefore have to be content with the bull calves as fast as they arrive, and endeavor to sell the good ones to the best advantage. Right here comes in, perhaps, the most difficult task the breeder has to contend with, and that is, to ascertain which are the best. Some of us will first examine the escutcheon, and if this is deficient, immediately consign him to the butcher. A few others will say he has a black nose, and I do not want him; others, he is either too short or too long, head too big or too little, too much white or not enough, no evidence of any false teats or milk veins, and so on to the end of the chapter. The plain facts of the case are that no man can tell how a bull will breed until he is tried, and this is after all, the true test of his value.

In order to dispose of our bull calves, some little missionary work could be followed, with, I think, future good success. We should be ever ready to educate the common farmers up to that point of knowledge which will lead them to see that the grade Guernsey cow is the most profitable on the face of the earth for

them to possess, and after they have learned this fact, not to put too high a price on our bull calves so as to deter them from purchasing.

A little experiment of mine might very profitably be related. There are within a quarter of a mile of my place, four high grade Guernsey cows, sired by my bull (owned by four different persons who only keep one cow apiece) that make from ten to fourteen pounds of butter per week, whenever fresh, winter or summer, and without any extra care whatever. I have in this manner, since I have been breeding Guernseys, endeavored to educate the people of my own district to the great advantage it would be to them to have a herd of grades instead of the common stock, and have met with very gratifying success. I have sold three bull calves to one dairyman and have his order booked for a fourth, whenever I can accommodate him with a good calf at twenty-five dollars.

It might be well if breeders would castrate a calf that was large and had a good constitution, and was not descended from particularly good parents, in order to show more fully the size and beef qualities of our stock which we know them to possess, although I am not wedded to the principle of a perfect butter and beef animal in one, yet we come a little nearer this than any other breed with which I am acquainted.

To sum up, I would say, cultivate your home market by freely showing your stock to your neighbors and friends, and by exhibiting them and their products at your county fairs, and do not be afraid to tell the people what you possess. Advertise your bull calves in the local papers, if you have an over-supply, and put a price on them that will not frighten a man who is forced to make a living by farming. An occasional advertisement in the "Breeders' Journal" and "Country Gentleman" will be highly advantageous, as you will find other breeders who must of necessity have a change of blood in their herds to avoid too much in-breeding. In this case also the price should be moderate, and not run up into the thousands, as all fictitious prices do more harm than good, in my estimation. I am well aware that a good bull in a herd is better at a high price than a poor one for nothing, yet in my experience I have bred but one bull that I could not recommend to any of my fellow breeders."

Mr. Betts has quit breeding grades, but his experiments with both Channel Island breeds lead me to say that the Guernsey bulls get the best grades. Alexander Scott has two bulls, and never could change the color of the nose entirely or with certainty. The

white-nose had gotten five light-nosed out of the Biddle black-nosed stock, but the balance were, and it thus changed his opinion that a bull could do it.

Mr. Paul spoke of two very superior herds in New Jersey which have Guernsey bulls at their heads, and with these the Jersey grades, which were the foundation, have been gradually brought up to their high excellence. Mr. Betts said that our best work is to introduce Guernsey bulls. A good one has no limit as to price, and is as valuable as those of any other breed.

Joseph Evans thought it best in making grades, to breed the Jersey and Guernsey together, as they assimilate so well, though it was too costly to practice. A. Scott prefers a first-class York State cow and Guernsey bull for grades, as the bull puts his mark strong on the calf. Mr. Evans differed with him. Mr. Betts said natives were more impressible, as they held no strong points to overcome, and were the best for Jersey or Guernsey grades. He read the new proposed scale of points for Jerseys in the "Country Gentleman," and showed from it and his breeding from Rioter, 670, that there must have been much of similarity between the two breeds, and the Guernsey influence was very strong. They might formerly have been identical, as the black noses may have come from the same source.

Mr. Paul said that the dairymen will not have Jerseys, because they are not strong enough to stand the cold and yield much, and were not large enough.

Adjourned to meet Friday, May 15th, at Joseph Evans's, Marlton, N. J. Subject for discussion: "The Guernsey Breeder," and opened by W. M. Paul.

W. P. HAZARD, Secretary.

Minutes of Meeting held Fifth Month 15th, 1885.

The May meeting of the Guernsey Breeders' Association was held near Marlton, N. J., at the residence of Joseph Evans, on Friday, May 15th, 1885.

The report of the committee on milk analysis was called for. Thomas M. Harvey reported no progress, except that Prof. Cochran was ready in the new laboratory to make the analyses. Mr. Harvey wanted explicit directions what to do. He feared the shak-

ing of the milk would prevent the proper determination of its constituents; the effort should be to find out how much fat was in the Guernsey milk.

W. I. Tomlinson stated that he had milk with 15.44 per cent. solids; they were half Guernsey. George Abbott furnished an account of a grade herd of 13.12 per cent. solids; part Jersey and part Guernsey; they were in Clayton Haines' herd. Isaac Nicholson said there would be over twenty-five per cent. of fresh and drying up cows. When an analysis is taken from a herd, a sample from each one should be taken and all mixed, and a sample of the mixture be sent for analysis. It should be known what stage of milking the cattle were in, and the season of the year should be taken into consideration, the food should be known, etc. The period of lactation makes a difference of twenty-five to thirty-three per cent. of the percentage. He had collected over one hundred and fifty samples for analysis for the State Board of Agriculture of New Jersey. The per cent. of total solids was only 12.59 in early summer, and 15.47 in October from the same dairy. He had no complaint of any samples sent except one, and that was from delay of express messenger. He was always very particular that the milk should be cooled before the sample was closed up, as the animal heat would affect it much and quickly. If the quantity of the yield was kept up to about the same number of quarts, the variation would not be so great as where one hundred quarts were sent sometimes, and at other times only twenty-five quarts or so.

Mr. Abbott was particular that the milk should be taken from both full milkers and strippers. He frightened one man to mix thoroughly, for fear in analyzing he might strike one of the low cans. Thomas M. Harvey said that Prof. Cochran was now ready to photograph milk, and he hoped we would be able to learn why all the fat was not gotten out of the milk of the Guernseys.

W. P. Hazard here read an article by Secretary de Moulpied, of Royal Guernsey Agricultural Society, on "White and black Noses," upon which Mr. H. commented.

Mr. Harvey advanced the thought that the question how to increase our stock should concern us; he had lost some from the bowel ailment in his calves, one that he had refused $100 for. It was fed only on skimmed milk and was in the orchard. He cut it open to see the cause of the trouble; the rumen of the stomach was very blue; he found a number of long pieces of hay, but how did it get there and how had it passed through the three previous stomachs? The fourth stomach was packed full and was almost

like manure ; the third stomach was empty ; he is satisfied it was caused by eating this hay. It had eaten its new milk all along ; but it had had diarrhœa and been costive at times, He had one that died that he had been feeding ground oats, with miik also ; the hull of the oats had impacked in its stomach.

Mr. Betts had had the same experience ; had noticed that sometimes his calves would eat their bedding straw. John C. Higgins thought the trouble was in consequence of the inflammation of the first stomach, the irritation made them want to eat anything even up to peach stones ; has had to sweep out his stables. This abnormal appetite makes them do it, and that is the cause and not the result. He had never had a case of diarrhœa with his calves, and his new boy in charge has had the same success. He got his plan of feeding from English people ; he lets his calves stay on the dam for three days ; then he feeds them only twice a day skim milk, they are not allowed to eat anything but a little meal by itself—this, not as a gruel, as the fluid goes to the last stomach, and the meal would go with it. He let them have all the meal they could eat at first out of his hand. W. M. Paul then read the following essay :

THE GUERNSEY BREEDER.

The Guersey breeder thus far, with few exceptions, has been very conservative, perhaps a little slow ; what advances his favorite breed has made have been done chiefly on its own merits. In the past the demand has fully kept pace with the supply, and importation and registration alone were sufficient to insure sales at paying prices ; but this has had its day and in the near future, individual worth will play a conspicuous part.

The Guernsey breeder has steered clear of many of the shoals struck upon by the sister island ; but he too, has his pet fancies, the most conspicuous of these is the escutcheon theory. I do not presume to say that there is nothing in this theory, but, on the contrary, everything else being equal, I would give a decided preference to a superior escutcheon ; but I think there is a possibility of laying too much stress upon it. One of the most celebrated Guernsey bulls in this country obtained his popularity mainly through his phenomenal escutcheon ; but the question now uppermost in our mind is, how many 14 pound cows has this father of escutcheons to his credit? There may be many if tested, but I have yet to hear of one brought to public notice.

We must get to breeding for butter records instead of escutcheons, unless it can be fully demonstrated that the latter has produced the desired results. The day is not far distant when every breeder will be put to the practical test—how much ? The average per year as well as per week, will be demanded, and these are

the tests of the future that will try men's herds. It is not enough that one should ask $1,000 for a cow, on the bare assertion that she is an imported registered animal, with a first-class Flanders escutcheon ; we want more. We want in addition to all these, individual merit, backed up with pounds and ounces, and the more of these and the further back they go the better. Phenomenal records alone, made by questionable feeding, will not suffice ; but a high average is what is needed ; the breed that can make the greatest number of pounds of milk and butter, of a certain standard, with a given quantity of feed, and can stand up and thrive under it, is the breed for the practical farmer, and this is the test they must come to sooner or later.

I have faith in the Guernsey cow, and believe that by judicious and careful breeding, on the theory of "the survival of the fittest," that she will eventually become the acknowledged butter cow of the country; but in order to obtain the high position she seems fitted to occupy, more liberality is needed on the part of the breeders, time and effort must be freely given, and money wisely expended to enable us to place her before the people in her true light.

This essay created much discussion.

Mr. Blight said for himself he wanted all the points, and to know all of them thoroughly. The breed is increasing in numbers, so he would sacrifice animals with bad escutcheons, if other points were not lacking ; but even if the escutcheon was not first-class and the pedigree was good, with other good points, he would raise it. Guenon classed bulls as good, medium, and bad ; of the three classes of bulls he would, of course, use only the best as long as they be had, but not if he had not a good escutcheon if he could possibly help it. If he had a heifer from excellent stock all through, and the escutcheon was not good he would keep it.

Mr. Hodgson said "If I had a bull without an escutcheon I would not ship him, but I might sell after telling all the facts concerning him."

Charles Wright said we were not sure of the reproduction of good cows from excellent stock. We don't want these extra records that are now made to insure good stock. Fast horses don't produce fast horses; so with these cows that you force up to extra yields ; it is better to have good even records.

T. M. Harvey said "With two exceptions I do not know better cows than that bull's get. [Referred to in essay]. There were reasons why his stock had not appeared in any fourteen pound list, because none were ever tested, and

second, his earlier heifers we sold before we knew their worth, and they got into poor hands and were badly treated. We have no stock we value so highly from the merit they have shown on our place."

W. P. Hazard thought it was high time that this discussion of the value of the escutcheon was discountenanced. The attacks upon it usually came from parties who had not had much experience with it, or really had not given it much attention, and yet what they had learned of it was such that they never buy without examining it and being influenced by it. Most of them like the essayist, would with one breath denounce it, and with the next admit "they would give a decided preference to the superior escutcheon." Now, if they disbelieve in it, why should they give it any notice or be influenced at all by it? In the case of the bull alluded to, the transmission of his superior escutcheon was of itself one of the best signs of his value—it shows his potency. If he was potent to do this so wonderfully as he did, he undoubtedly transmitted his other qualities, and no one who has examined him or his descendants carefully, can fail to have noticed the superior quality, the rich skins, and the fine forms through several generations. No better opportunity exists than the approaching sale where so many of his children, grand-children, and great grand-children are to be sold; the heifers there will be found as fine a lot as has been brought together. No better proof of the value of the escutcheon can or need be brought forward, for it has been handed down in its superior form, and with it all the good qualities which it represents in a concentrated form. If tests were popular with Guernsey breeders, we believe the descendants of no other bull would outrank those of this one. Test any Guernsey with a first-class Flandrine escutcheon, and if she fails, I will pay all expenses and go many miles to see such a phenomenon.

Joseph S. Evans, the host, stated that he fed his cows winter before last one-half in bulk each of bran and corn ground with the cob, five quarts at a feed twice a day; tried a little of cotton-seed meal and found it to pay in the extra quality of milk—gave not over a pint at each feed; they milked very well and looked well. His farm was mainly in grass—much of it was never plowed. He does not raise much corn; he has to buy it, and so fed cotton-seed meal rather heavier this past winter; only one-fourth cob meal, three-fourths bran, and two and one-half quarts per day of cotton-seed meal; a bushel a day to twelve cows The results were that with the same number and nearly the same cows, this winter as

last, and about perhaps the same number milking, he sold during the past four months 1,500 quarts more per month, or 6,060 quarts more than in the same four months of last year. He has thirty-two cows and twenty-four stanchions, and he puts those nearest calving in a division by themselves. He feeds hay made of natural grass, green grass and white clover, never plowed. Clover hay is fed to cows dry or nearly dry. He tried brown middlings or ship-stuff, and it increased the flow of milk; would feed cotton-seed meal up to calving, and has found no difference. George Abbott, who buys his milk, testified it was exceptionally good. He brings his cows in as near New Year as he can; leaves the calf five or six days with the cow; feeds them two weeks with warm new milk. Last year he fed oatmeal at this stage; and this year flour stirred into the milk and all scalded; as soon as the calf will, he lets it eat meal and hay; thus by the time grass is ready they are ready to go into the pasture field and will pick around the fences. He had never lost a calf until one lately; the cow came in, he sold the calf off; then she would not let down her milk, so he put a good healthy calf on her; it filled itself like a tub, and the feverish milk killed the calf. The gruel he feeds a calf with he makes by putting in a handful of ground oats or wheat flour and a quart of warm water, he makes it so thin the calf can drink it, with a little milk at first, but gradually takes away the milk and lets them eat meal.

John C. Higgins said he fed gruel made of corn and oats ground, but sifted; he also feeds them milk.

Alexander Scott feeds a pint of cotton-seed meal a day to each cow; had fed cotton-seed meal for the last ten years and for twenty-five years before the war. Formerly, he fed cotton-seed meal whole, rubbing off the hulls and getting it clean; he had also found it good for pigs.

Silas Betts feeds a little over a quart of cotton-seed meal a day; has fed for last three years about seven and one-half per cent., and finds it an excellent substitute for roots. Oats and corn meal, fed with cotton-seed meal (the latter being oily), prevents constipation. He used to raise many beets; feeds now about twelve quarts mixed meals and don't feed any beets, as he finds cotton-seed meal better and cheaper than raising beets.

Joshua Harmer has fed about twelve quarts of corn-meal bran and wheat bran; the corn-meal hominy bran is kiln-dried; heart and hull of corn taken from the corn which is shipped abroad. His twenty-five cows made 6,980 pounds of butter, and he sold about one hundred quarts of cream besides; this is an average of 272

pounds per cow. As some had not had good results from cotton-seed, T. M. Harvey requested that a committee be appointed to collect facts concerning the feeding of cotton-seed. T. M. Harvey, Ezra Michener and R. H. Hodgson were appointed.

Next meeting to be held at E. T. Gill's, Haddonfield, N. J.

W. P. HAZARD, Secretary.

Minutes of Meeting held Sixth Month 12th, 1885.

The Association met on Friday, June 12th, 1885, at the residence of E. T. Gill, Haddonfield, N. J.

The following were elected members: Samuel S. Conard, West Grove, Pa.; William I. Tomlinson, Marlton, N. J.; John L. Balderston, Kennett Square, Pa. Ezra Michener was elected chairman of the committee for examining into the values of cotton-seed meal. T. M. Harvey expressed the need that was felt for complete analysis of butter. Committee on the Milk Analysis reported nothing done towards it yet.

Isaac Nicholson spoke of his grades being well formed; has a two-year-old heifer that gives 14 quarts in winter and spring; finds them thoroughly satisfactory and hardly to be told from thoroughbreds. We cannot urge too much our neighbors to grade up. He had never raised any common stock from which the yield was so great as from the Guernsey grades.

George Abbott, Jr., finds farmers, generally, think that the grades of Jerseys and Guernseys would not yield so much as native stock. My farmer experience is that the yield is greater from grades than from native stock, on account of their continuous and persistent milking.

Silas Betts said that one reason that our grades are so much better is, that most people who breed calves to sell are not as particular as to what scrub, or even grade bulls are used. It is impossible to repeat the qualities of their dams. The country is flooded with such young stock; they are brought here in droves from other States; but farmers have learned better by experience, and there are not so many brought in now as formerly. The improvement in quantity and quality can only be secured by more attention to breeding, and certainly through the bulls. The prices

brought at the recent sales for bulls showed an excellent average. As to disease, the present plan will have a tendency to perpetuate it by the bringing in of this poor stock, and if farmers can only be led to believe this, it would soon be kept down.

President Palmer said, many believe it pays to change cows. If one goes dry four or five months, it is sold to the drover. He takes them to Lancaster County where he sells them at a low price, or they are put on a farm and kept until they are fresh. The drover rebuys them and they are resold to perhaps the former owner's neighbor ; a man can't or won't sell his best, so this poor stuff keeps floating around until at last it gets into the hands of one who fattens it, and thus it is wiped out. He knew a man near Chester, Pa., who was getting but 170 pounds of butter per year from each cow ; he hunted up a good bull calf out of a first-class Jersey cow, and has since kept grading up, until last year he got over 330 pounds from each of ten cows.

E. Balderston reported he had an eighteen months heifer, got from T. M. Harvey ; he took the calf out of the stable at five weeks old, weighing 152 pounds live weight. A. Scott thought he would get very poor buying and selling ; found it best to get good cows and keep them.

Silas Betts thought that any objections to Guernsey meat on account of yellow fat would soon be done away with ; like asparagus, they objected to his green asparagus until they become acquainted with its merits. These whims should be put down as to our crops, milk, butter, breeding, etc., and we should not pander to them, nor to the notions of middlemen either. It does not pay to produce the greatest amount and poorest quality, but produce the best and get the highest price for it.

Joseph Evans had no trouble to sell his pure-bred or his grade calves from objection as to color, so long as the quality was right. Raising grades from Jersey and Guernsey mixed we could build up an excellent herd, could get a larger and smoother animal ; we can use grades and unregistered animals for the purpose. My best are from thoroughbred Guernsey bull and unregistered Jersey cows, and he cited instances from two other herds.

Silas Betts had done the same, and the results were excellent ; but most farmers will not go to the trouble and expense of getting such animals to start with ; but you would get many males that we don't advise the use of. They will certainly be good animals, but you might have to sacrifice half your calves. We should rather advise taking "natives" as being more valuable to

the great bulk, as they will produce calves they can turn off profitably—the bulls will be large for veals and the heifers will be good.

E. Balderston said "We started our herd, aiming to get something to make butter; started buying the cows and a number of grade Jerseys and grade Guernseys, and got a full-bred Guernsey bull, and so bred our stock. We kill the bull calves at three days old, so as to get the milk. Have now a grade Guernsey herd we are satisfied with; their percentage has resulted satisfactorily. The full Guernseys are the best, and those with Jersey and Guernsey are nearly as good." He fed ten tons of cotton-seed last winter.

W. M. Paul alluded to two herds of grade Jerseys; the parties sold their calves and replaced with grades as they went. They get ten dollars and twelve dollars for their calves at a week or so old. Isaac Nicholson finds that he gets about the price for grade Guernsey calves, as from native cows, but not so for Jersey grades. He sold about fifty last year. Thomas M. Harvey finds Jersey grades can hardly be sold, they are so thin, but butchers eagerly buy the Guernsey grades. He occasionally does missionary work by giving away some bull calves and sells others, some as high as one hundred dollars. The Guernsey beef he and his neighbors have killed are the most superior for rich good meat, though from old cows.

Joseph Evans gave his experience with milk fever. He lost a cow; the veterinary said the symptoms were those of dry murrain, a disease or stoppage of the manifold. She had a calf the night before—was all right apparently—at 4 P. M. she was down; he doctored her all night, but she died the next morning. In milk fever there is stoppage of milk; it mixes with the blood and poisons it. When the manifold gets dry and packed, it is so dry you can take it out and burn it; this is generally in the fall. They die quickly. Milk fever is generally apoplexy; nourishing the foetus takes all the material for milk, but just when the cow is about to calve there is too much, and it goes to the head and produces parturient apoplexy. Parturient milk fever requires the bowels to be opened and kept loose. Brown's Homœpathic treatment, published in New York, is a reliable book. Mr. Harvey gives arsenicum, ten drops of tincture prepared for cattle, every fifteen minutes. If they abuse themselves, he gives aconite. If they swell, give ammonia. Homœpathic medicine assimilates with the blood, allopathic with the stomach.

E. Balderston had a cow milking several months; he turned her out of the stable at noon; she had not eaten her feed and was dauncey. After dinner he found her rigid, the nose warm, but she was in great pain. He gave her twenty drops of aconite and rubbed her; in half an hour gave another dose; after awhile she got up and recovered. Homœpathic medicine is good because easily administered. Silas Betts in cases of hoven gives ammonia causticum; it reduces the gas.

George Blight said, Mr. Scott asked if cows should be tested when fed on clover or timothy hay. Siles Betts feeds timothy only when he has nothing else; but cows will prefer oats straw to it. Unless timothy is cut early it is poor feed for cows. He would feed oats straw once a day, but it must be cut before the oats are ripe, and when the oats are filled out; he feeds hay at other meals. It acts well on them as an alternative. But there is nothing better than clover hay for cow feed; also Cashaw pumpkins for fall feed; raised on ground by themselves, they produce abundantly, and make much rich and golden milk; feed without the seeds.

George Blight cuts oats hay, all eat it, and it produces abundantly; afterward the same ground is prepared for turnips. He doubts the advantage of oats straw; he had found lice upon his cattle after using it, though he would not positively say it produced them.

Isaac Nicholson said oats straw is good for scours in horses.

Adjourned to meet at Willis P. Hazard's, in July.

W. P. HAZARD, Secretary.

Minutes of Meeting held Seventh Month, 1885.

The regular meeting of the Guernsey Breeders' Association was held at Maple Knoll, near West Chester, the residence of the editor of the Guernsey Breeders' Journal, July, 1885. The President, Henry Palmer, was in the chair. After the reading of the minutes of last meeting by the Secretary, W. P. Hazard, Messrs. Davis E. Allen, of Avondale, and D. Robertson, of Dagus Mines, Elk County, Pa., were proposed, and John L. Balderston, of Kennett Square, was elected a member.

The Secretary then read an article on "The Guernsey Cow," by Mr. T. De Moulpied, Honorable Secretary of the Royal Guern-

sey Agricultural Society, of which the following are extracts: "Of the home of this cow—the little rock-bound island of Guernsey—I need hardly speak. Touching the origin of the Guernsey cow, little may be said; a certain mystery surrounds this question which research has not been able to penetrate or explain. Some early writers have surmised, through the occupation of these islands by the Scandinavians, that the cattle came from northern lands; others have suggested that they were imported during the reign of our Duke William of Normandy, anterior to the conquest, either from Isigny or the plains of Normandy. It, however, still remains an open question.

"The ordinances of our Royal Court, though silent as to origin, are the safest standpoint from which we may look backward. They are eloquent by the fact that so far back as 1819—that is to say, at a time when communication was of rare occurrence, at a time when steam navigation was in its infancy, at a time when the herd book question was unknown—the legislature of our little island passed ordinances which prohibited the introduction of any foreign cattle; and to the thoughtful observer these prohibitory laws cannot be received as the work of prejudice or ignorance, but must be credited as being passed by intelligent, right-minded men, who, jealous of possessing a breed of cattle whose milk and butter qualities even at that remote period were felt to be remarkable, feared the deterioration of their herd by the mixture of any other blood. We know of no other breed of cattle, though naturally protected as this one was, which has kept as pure and intact as this particular breed. On account of our proximity to France, and the similarity of language, customs, laws, and of the fact that even at the present time our meat supply comes from that country, it would appear that those prohibitory laws were intended to prevent the importation of Norman cattle.

"Further it may be urged that the natural jealousy of the Guernsey farmer for the purity of the breed of his cattle has been such as hardly to necessitate legislation on the matter. But the law was evidently passed as a protection against less scrupulous alien importers.

"Another point, and this one of far more interest and of far more importance than the question of origin, and far more flattering, is the marvellous milk and butter qualities this breed possesses; and if it is gratifying to boast of long and unsullied pedigree, it is far more so to find that the generations which have come and gone have borne but one and the same testimony 'to the unequaled and

unsurpassed richness of the Guernsey cow.' We are living in a period when high pressure is brought to bear on every article of produce, as well as commerce, when everything is weighed in the scale of comparisons, analyzed in the crucible of merit, eyed through the microscope of competition; still the tribute paid to the Guernsey cow remains the same, her fame is as fresh and unsullied as ever; though at a period of intense competition, the verdict is still the same, and confirms the old, old story.

"If the excellence and qualities of our cattle have been slow to spread, it has been sure and undisputed. The color of the butter and the quality of the milk have the first place in the appreciation of all breeders. Imported into England, her place has been to color the butter of their herds. The milk of one Guernsey cow imparting color and flavor to a herd of a dozen, she has become the family cow, and her produce has been laid on the rich man's table in preference to all native produce; and here we would ask to what other breed has this compliment been paid? What has been said in England has been re-echoed in America, and wafted back to us across the broad Atlantic. Nearly fifty years ago the Guernsey was imported into America, and since 1840 the Biddles, the Fishers, Dr. King, and other residents near Philadelphia, have them in their dairies, and no other breed has been allowed to replace them. To-day America counts this breed by thousands, and the American Guernsey Herd Book Club alone has over three thousand head of cattle entered on their registry, and still all has been done without noise, without sound of trumpet. There has been no Guernsey fever, no hue and cry after milk and butter records, no sensational sales; all has gone on imperceptibly, as it were, and almost unknown to the Guernsey farmer himself. To-day we look with pleasure to the gigantic strides toward popularity taken by this breed in this great country, and we watch with increasing interest the work now carried on by its admirers.

"It is not a question of beauty alone that we are pleading, but one of quality and beauty combined. When we come across a Short-Horn or a Hereford, the first impression on our mind is what a fine beef animal; when we see a Jersey our first thought is what a pretty little beast; but when we meet a Guernsey, the first and lasting impression on our mind is what a splendid milch-cow. You see it is in the broad, golden rim encircling her eyes, in her glossy horns and hoofs; you see it in the orange color of her skin, sometimes so full of yellow dandruff as to appear as if the animal had been powdered with gold-dust; you see it in a skin as soft as vel-

vet, in her long head and neck, deep wedge-shaped shoulders ; in these long, prominent milk veins, and finally you see it in that large, deep, well-filled silken bag, so yellow, and enveloped by a skin so soft, and so thin as to almost appear transparent; and lastly, if you are still incredulous, a look inside the ear will be sufficient to convince you of the excellency of the animal before you. But add to these points—so essential to a dairy cow—her benevolent looking head, with its large dreamy eyes and clear buff nose, and the beautiful coat of red or lemon fawn and white, and you are justified in adding the word beautiful to the quality of good."

"It is not simply on English and American fields that the praise of the Guernsey cow has been sung ; for the same praises come to us from Paris as from the Cape ; from Australia as from New Zealand ; and the animal fostered in her native land, or closely confined in the winter snows of Canada, or roaming in American ranches, retains the same characteristic qualities ; and her milk is as abundant and as rich, her butter as yellow and as fine, as when seen for the first time neatly laid between two fresh green cabbage leaves, and covered with white linen, in the basket of a Guernsey farmer's pretty wife in the stately market of old St. Peter-Port.

" One more important feature of this breed, is its power of fixing strains. It is a well known fact that young animals throw back and develop the traits of a remote rather than those of an immediate sire. Here, thanks to purity of blood, the traits are fixed, there is no "striking back," and this is so strong that often it is difficult to detect the cross from pure stock, so strongly is the offspring similar to its sire. This is applicable to this breed alone, and is of the greatest importance to those who grade up herds for dairy purposes.

" Enough has been said to prove the marvellous superiority of this breed, and as the winner of the Derby received the acclamation of the thousands of admirers of horse flesh, so should the Guernsey cow remain facile princeps with those interested in the breeding of horned cattle. The Guernsey farmer is now awake to the importance of keeping a correct registry of his herd, and also milk and butter records. The Royal Agricultural Society's Herdbook is there as a guarantee of the genuineness of this registry, and there is no doubt that the Guernsey cow will, in the course of a few years, be known and appreciated in every hamlet of Old England."

After some routine business, the question of the day, " Points of Selection of Animals for Dairy Purposes," was opened by the host, W. P. Hazard, who said in substance: " The student of

Guenon will see that he was a master judge of stock. After many years of much experience, he was able to state that, under given circumstances good cattle would have certain points of agreement, and when the surroundings of animals were taken into consideration, very nearly the amount of product can be told by one who can combine these points. The strongest and most preliminary point of judging the quality of an animal must be its constitution and its health, for this will give it the ability to do what is expected of it. Without this foundation it will not have the ability to do or to do it long. With health assured, the wonderful compound piece of natural machinery works true and for a specific object.

"We see four points of Guenon as follows: health and proper conformation, the skin, the hair, and these as affected by the health and climate. We supplement these points by others which we have practiced for years; we like to handle the flank skin, for, being near the udder, it partakes more fully of its character. By the sight and the feel of this the judge will get the best and most accurate value of the quality of the skin. Then proceed to examine a fatty protuberance under and near the end of the lower jaw. Our observations for many years have proved to us that where the protuberance is very full, very soft, and especially very yellow, and so large as to be divided into two parts, that cow is more than likely to be a rich butter cow, and that its milk will be very rich.

"Now let us examine the rear portion of the animal which is covered by the escutcheon—the sole indicator of the internal capacity of the udder. If this is large, covered with fine short hair, and as near to no hair at all as can be, and if the skin within its outlines is of that peculiar yellow color called nankeen—and this skin is soft, thin and of a rich greasy feeling—and if on scratching the skin the nail dislodges little scales of a fatty substance called dandruff, then we feel convinced that we are handling a cow rich, and of good quality. The interior of the ears of such a cow will most likely show the richest yellow. The horns will most probably be fine, of waxy semi-translucent appearance. Few really good cows have the chalky white horns. Around the eyes the rim will have a rich, saffron shade of color. As the udder is the receptacle from which this goodness is to come, we must examine this carefully to see that it is of the proper full shape in each quarter, nearly round in the lower portion, extending high and full behind, with as little hair upon it as we can get, but with a soft, rich, mellow skin, as near a deep rich yellow as we see in Guernseys, well marked with large veins, one of the most indubitable signs of a long milking cow; the teats of a good size and of a golden hue."

Mr. Blight said: "I desire to commend Mr. Hazard's article. It opens up a subject in a way which should be examined and studied by every member of the club. It is in advance of even Mr. Guenon. Mr. Guenon does not include as many aids as Mr. Hazard and others who have been Mr. Guenon's students. I would call attention to a quirl on the back in addition to some of the suggestions made. It should be back of the shoulder, and the nearer the tail the better. I also think there is a great deal to be depended upon the horns. A coarse, thick, chalky horn, and especially an upturned and flaring horn, is to be avoided. It indicates a wild, nervous disposition, and not a good milker."

Mr. Kent said the horns could be turned and trained to grow inward and downward. Several suggestions were made concerning horns. Alexander Scott said a perfect head will show a perfect horn and a perfect cow. Mr. Betts called attention to the tests reported in the "Journal" for July. After dinner Mr. Blight called attention to the fact that the State Agricultural Society would open in Philadelphia on the 23rd of September, and hoped the Association would be well represented by some of their choice Guernsey cattle.

S. Betts discussed the management of the fair; the way outsiders were brought in; the various ways of judging; the awards should be made honestly and rigorously, and should be made known.

W. P. Hazard thought the judges should be carefully selected, so that they should have no interest in the awards; that they should be employed and compensated, and then be held rigorously to account, if necessary, for their awarding; that their names should be printed in the premium lists, so that every one would know who was to be judge, and what they would have to enjoy or submit to, and then they, knowing who would be competent or otherwise, would be guided in sending their stock. As it is now the stock is sent and submitted to judges, sometimes, that the owners would think very unfit. E. Michener stated his experience as judge; at one dairy fair in New York a man came behind him and offered him a fifty dollar bill.

Experiences were related in feeding cotton-seed meal. Thomas Sharpless fed from two to three pints twice a day, and it had no bad effects. In summer it and corn meal would soften the butter. He saw in Tennessee, cows feeding from piles of seed in the fields. Does not believe it creates abortion. Charles Carter had fed it moderately, but found no trouble, though he depends more upon

bran. He does not believe it affects abortion. Joseph G. Williams stated that his cousin used to have abortion, but feeds cotton-seed meal now, and has no cases of it; it mellows the skin of his steers and cows. Oats ground will make milk and butter, but perhaps not of the highest quality; it may make it white. His Guernsey butter was firm, and his grades when he first got them made the hardest kind of butter, harder than from natives. The best lard is the firmest.

Mr. Betts never had any trouble keeping his Guernsey butter, and don't believe, if made with proper care, but that it is as firm as any other. It is so rich it requires care. He has kept it in summer for four weeks in his cellar as good as any. Alexander Scott has carried it to Philadelphia, and has never used ice, either with cream or milk, and a better, firmer grained butter he never made. But he never used ice for cream or butter when he was feeding cotton-seed.

William B. Harvey thought at times Guernsey butter was not as firm as the Jersey, because there was more of the oleine in the former than in the latter, which has more caseine. Has made both at his dairy at the same time, and tested them, and he found the Jersey would stand up better, because it is not so rich; but the quality of the Guernsey is much richer all the time, and the color a great deal better, especially in winter. But he had to use ice, and that would affect it.

Mr. Balderston could not gather his butter at 64 degrees, it was so hard. Ezra Michener never had soft butter; he churns at 62 degrees; milk set in Cooley creamer; the cream stands in the cellar always at about 62 degrees; he has made Guernsey butter for about eight years. His neighbors with Jerseys have butter not so solid. Both he and Mr. Betts think it a mistake to suppose Guernsey butter is soft; the beginners sometimes say so, but the older ones talk of it as firm. Thomas Sharpless has a neighbor who makes his butter in a spring house, and has never churned soft butter. His own experience differed somewhat. He attributes it to the difference in spring houses. His water is deep under ground and not affected by the temperature. It is the damp and mucky weather that makes bad butter.

Joseph Williams did not believe this was the cause. It was thought different temperatures and different places make the variations; but it shows inferences drawn from limited observation and experience alters results.

George Abbott does not think rich milk spoils any sooner than poor milk; he has found the cream on top sour, but could sell the skim milk below.

The butter discussion was continued for awhile, and the meeting adjourned to meet at the call of the Secretary at S. P. Taber Willets's, August 14th.

Minutes of Meeting held Eighth Month 14th, 1885.

The Association, pursuant to call, met at the elegant residence of Mrs. S. P. Taber Willets, Roslyn, L. I.—the only lady member. The Secretary was directed to cast the ballot for the members nominated at last meeting.

W. B. Harvey read a partial report submitted by the Committee on Milk, presented some photos of the full and skim milk of "Worthy Beauty" and of starch prepared by Prof. Cochran, and stated that the Professor intended spending much time hereafter in testing milks.

The Secretary presented the invitation of the National Cattle Growers' Association to become a member. It was partially discussed, and referred to the Executive Committee.

Senator King, of New York State, being present, extended a welcome to the Association on their first visit to Long Island. He said: "We have gone through various phases of experience with the different breeds of cattle; the Devon was the first, and next it was the Short Horn, for which this place is noted; that phase has passed, for our farms are getting too small. So we come to the Jerseys and the Guernseys. The present place of meeting had bred the Devon, Short Horn, Jersey, and other animals, but all had been disposed of, and now the thoroughbred Guernseys were the only cattle on the place; and the action of the host was an illustration of what is being done in many other parts of the Island.

"I, with many others, have concluded that the Guernsey is best adapted to our purpose, as my father and Mr. Biddle had done long ago in Pennsylvania." Their experience was admirable, the milk and cream was so much richer than that of others. His father had said about the Jersey: "Why do you bring such little cattle here to spoil the breed?" It went along so for two years; then he

gave him a Guernsey bull calf. After a while he said: "My butter is getting so much better; I can't understand it." He said it was the extra quality of the pasture. As the bull's influence widened, after another year he came and said it was the animal that made the superior quality of the milk, and now I will not exchange the Guernsey for any other

The Guernseys have the qualities which the Jerseys have not; the latter lack the strength, the bone, and muscle. I am glad to see that Mrs. Willets has gone into their rearing. All Mrs. Willets's animals are good and worthy of her as a member of this Association. She has already sent a good sire to Texas.

He has thirty acres and he tethers them entirely; it is his experience and that of his neighbors that they have very fine butter cows. "It is a great pleasure to us of Long Island to welcome your Association here; this house has always been noted for its hospitality," were his concluding words.

Col. M. C. Weld, of the "American Agriculturist" corps, said that he was an old lover of the Guernsey, and first introduced them to the notice of Mrs. Willets in the cow "Fernslie Cottie," and had made the first picture of "Cottie," mother of "Fernslie," from which animal seven quarts of milk would make a pound of butter. One point may be a heresy to allude to, and that is the beef qualities of the Guernsey. She is pre-eminently the farmer's cow, for not only is she the best butter maker, but her beef qualities are important—the calves are good for veal, and the animal afterward is so good for beef; it helps their introduction, is the reason he alluded to it.

"After visiting the Island of Guernsey, I was tempted to talk of its cattle. I then dwelt on that point, as this matter of beef is the leverage point to use with the uneducated mind."

He then spoke of Mr. Swain's early experience; his attention was called to Guernseys by his having a Guernsey farmer, who came over on a cod-fish vessel. He imported through this man's friends two head of Guernseys, and one from Alderney, and one from Sark. His habit was to visit different vessels arriving, and buying such animals as were brought over; at one time he bought a zebu, and added to his herd. He had a fancy for buffaloes, and had an idea that the blue color of the Jerseys was due to the European bison mixture. These Mr. Swain experimented with in breeding. He had one mixture of buffalo that gave forty per cent. of cream. Her daughter looked like a high-bred Jersey, but her tail was very short. The third generation, by a Jersey bull, pro-

duced a genuine Jersey; result—one buffalo cross, one unknown cross, and one Ayrshire cross. But all these experiments were thrown aside for the pure Guernsey.

The question of the day for discussion was next introduced: "Will the rearing of Guernseys afford profitable employment for women?"

John C. Higgins expressed the thought that if ladies shall desire to rear fine stock (and it is a laudable one) then the Guernseys are the best. Nothing yields so rich cream, as the rich cream of to-day shows; it is unexcelled; nothing could excel it, though the Jersey may equal it in some respects; it is as rich as cream should be. In the animal, there is that peculiar placidity, that affection for human kind not excelled by any, unless by the dog or the cosset lamb. It is the best and most intimate friend on the farm. It will approach you or wait until you come to it. If we have beauty of form, richness of cream, this kindly disposition, what can be more delightful?

"The charms of farming are praised, but among all of them nothing is a higher joy to me than my cattle. Any lady who has the enthusiasm of our hostess will find that nothing can be more delightful; her success is what might warrant any one to take it up, as she has done; she has a herd of the highest type—having the Short Horn qualities with that of the greatest richness. Such a home on the farm is the best safeguard for her children; but she must educate them by improving the stock of cattle not only for herself but for the country. Ambition of sending such animals to England may be held up to the children. If Mr. and Mrs. Willets would, (and this Association would recommend they should) put their judgment and energy into this breeding, they would become noted."

Silas Betts said: "Our presence here as an Association bears testimony that our hostess' efforts are to be commended. In addition to merits, it is only appropriate that the example set by her should be widely imitated. Women have been successful and noted for raising fine herds; one for Short Horns in England, one for Jerseys in Canada, one in our American States; all were women. One of the reasons for failure is the gathering of large herds; there is a tendency to disease. If our small farms near cities would take hold and establish herds of six or ten head, they would multiply vastly the wealth of the farmers and of the country; for good cows there is always a demand beyond the supply; too many good ones it would be difficult to produce, for family cows are always wanted;

living in the country is now the custom, and small farms are owned, and all desire fine family cows. Guernseys are admirably adapted to supply this want. Women are best adapted for it; it must be so, for in the islands the women must be the principal element in bettering them."

Vice President Cook, of the New York State Agricultural Society, hoped there would be a good representation of Guernsey breeders and their fine cattle at the show opening September 10th.

Joseph Pyle, at Mrs. Willets's suggestion, thought it desirable that a number of portraits of fine animals should be gotten up and distributed, to show farmers what the breed is. The publisher of the "Journal" suggested an increased circulation as the readiest means, for each number contained a fine portrait of some most noted animal.

Meeting adjourned to meet September 10th, at the residence of W. M. Paul, Moorestown, N. J. Subject for discussion: "The Practical Testing of Cows."

W. P. HAZARD, Secretary.

Minutes of Meeting held Ninth Month 16th, 1885.

The Association met on Wednesday, September 16th, 1885, at the home of W. M. Paul, near Moorestown, N. J. The meeting was held upon the ample porch surrounding the spacious mansion, the latter situated on a well-kept lawn, and adjoining an orchard in thrifty condition, attesting the value of the land for fruit raising. The large nurseries of Judge Parry, of Cinnaminson, are not very distant, and the country around is noted for its fruit and garden supplies. The fine and thoroughly well-kept farm of the host was evidence of its value as farming land.

After the reading of the minutes, George Abbott, Jr., was elected a member. In addition to Judge Parry and many invited guests, James James, Esq., the noted breeder, and originator of the Herd Book, of Guernsey, was present, and it was too good an opportunity to be lost to gain Island information about the breed, and, therefore, he was freely questioned. James James kindly gave a report of the Dairymen's Association, of the comparative merits of the Jerseys and Guernseys—one point allowed for each thirty pounds of milk.

Mr. Betts asked, "Is there an increased attention paid to the use of better sires, and especially since the establishment of the Herd Books?"

"The Islanders are very conservative, and for twenty years that I have resided there I have seen steady improvement but not as much as there might be. The Islanders see that they must register, and the demand in England is making them test the milk, and the agricultural shows in England have helped this much by their premiums enabling farmers to send their animals. Another inducement, for the last two years has been under way in England by the establishment of a Herd Book Society, which has now been established, and one volume issued.

The farmers do not like to keep bulls, on account of low rates for service; at the close of the season they are let out as low as 20 sous. I charge 10s, and many more cows come now than used to. The majority of bulls are sold as veal; if kept until yearlings and do not prove good, they are made into steers or sent to the butcher. They will send to the best bull for the lowest price. The Royal Herd Book is increasing very much in its number of entries, many are sent to the other book, though so much less care is exercised that almost any animal is entered there."

After dinner, the question of the day was taken up and discussed by the host, W. M. Paul, on "the practical testing of cows."

"The testing of cows in this country of late has been more of a speculation than of a practical character. It has been a test of the animal's physical powers to see how much forcing and stuffing she would stand without dying, rather than a test showing her relative value as a milk or butter cow. The average farmer cares little about phenomenal records made by high feeding and other questionable means, but the question uppermost with him is: How much will she yield in the common dairy with rational treatment? and here is where every breed must come finally to be tested and to take her stand and value accordingly, measured by this every-day practical test in the working herd. It is claimed that the Channel Island cattle are pre-eminently the butter dairy cattle of the world. That is, they will yield more butter of a superior quality, on a given quantity of feed, than any other known breed. Now if this proposition be true, and it can be fully demonstrated by practical tests, then no butter dairymen can afford to be without either the one or the other of these breeds or their grades. I am satisfied myself that this can be substantiated. I think that most breeders of these cattle will indorse the same. What is needed is a series of practical

tests showing the average yield of the breed as compared with other breeds under similar treatment, and if they can be shown to produce from three to five hundred pounds of rich golden butter per annum, while other breeds yield only one to three hundred pounds of butter of an inferior quality, in the same period of time, then their real value will be established and their worth appreciated.

"I believe that most of the tests made by the Guernsey breeders have been of a fair and practical character, and those who have taken the pains and trouble to make persistent tests have been, no doubt, highly gratified with the results; on the Island they expect a pound of butter from each good cow for every day in the year, or about four hundred English pounds per annum, which is a very satisfactory average. One breeder in this country who has been foremost in testing, and did much to further the Guernsey interests, reports ten herd-book animals, six matured cows and four three-year-old heifers, making a maximum yield of eighteen pounds six ounces of marketable butter per week. This is an exceptionally good test and far above the average, but it shows the working power of some of the best animals; and if breeders were more zealous in testing and careful to breed from only the best, the standard might be elevated to a high plain.

The same breeder also reported a milk test for his entire milking herd of twenty-one head, made without forcing any preparatory feed, but as a fair average of their every day work as follows: Fourteen matured cows, and seven two-year-old heifers, average time since calving, five months and five days; the average of milk, twenty-three pounds and one ounce; the matured cows were in milk much longer than the heifers, which, of course reduced the average somewhat; but on the whole it is a very creditable record, and shows the comparative value of the Guernsey as a milk as well as a butter cow. We want more of these records made in a similar manner. It is high time that the Guernsey breeder was awakening to the importance of that live subject, "practical testing of cows."

This was followed by the reading of an article on the same subject by W. P. Hazard. Discussion followed, in which Mr. Betts and James James participated. Not many tests have been made in Guernsey, only two by official authority, and one for Mr. Fuller, of Catasauqua. Mr. Betts thinks the scientific testing of the Jersey has about exploded, and has hurt the interests of that breed, for many creditable tests have been refused publication, for fear their

herds might be hurt by the issuing of these facts. "If in the past we should have published the tests of the Guernsey," remarked the speaker, "I fear we would have hurt the breed. The Jersey tests that have been published I cannot really put entire credence in, for the methods employed have deprived them of their worth because they have no practical value. The horse brought up to a great speed is different from the value of the tests in the dairy. We are glad the Guernseys have not been tested in this public manner, for to-day the average merit of the Guernseys is really believed in, yet I believe fully in proper testing as suggested by the essayist. We can show a large number of Guernseys in this country that have and can make from sixteen to eighteen pounds, and that is enough to show."

S. C. Kent—"I have had three, 'Lilla,' 'Cora,' and a Jersey that have made from fifteen to seventeen pounds of butter. Had a letter from a gentleman in New York State, who bought two cows at one of my former sales of Jerseys. He reports a yield of seventeen pounds from one, or double what I could get from her as a fair test. The other, a beautiful little animal that we supposed would make four pounds, he says made fifteen pounds. One cow went to Canada, through quarantine, and had some mishap, made eleven pounds, and we tried her several times, and she gave thirty-six pounds of milk, and they say she yielded seventeen pounds. I don't doubt that these people are misled in some way. If we can get our Guernseys to yield ten to fifteen pounds, we ought to be satisfied. The official test I do not understand. Our herd will average about thirty-two per cent. of cream. A first-class cow will give eighteen quarts, or two pounds of butter; second-class, fourteen quarts per day, or twelve pounds of butter per week. An extra good Guernsey cow, I stated I thought, would make eighteen pounds; she tested seventeen and one-half on a test."

T. M. Harvey said: "Our Guernsey milk is so in demand we don't make much into butter. I used to breed Jerseys, and when they made thirteen to fourteen pounds, it was startling. While the Jersey breeders were improving, the Guernsey men were standing still. Through James James, the Island people were urged to improve and keep the best at home. I owned 'Sea Gull,' she made thirteen pounds on grass, then I added sowed corn and got less. She was one of the early importations, and was not noted as a good cow."

James James replied to the conservatism of some remarks of Mr. Harvey: "We should in first place look to how she has been

reared in her youth; we can't take a worn out cow; she must have a strong constitution. Good cows must be brought up on the mother's milk, and not on skim milk; she may not be quite so well-looking. I churned whole milk and found I got a great increase; the residue was churned again, and one-fourth pound was got. It was churned again, and still some butter was obtained. Much whole milk is churned in Guernsey."

Mr. James, in answer to a question, replied: "Yes, there are still some inferior udders, though there is some improvement in that respect, because the establishment of the Herd Book here and the more careful selection by English and American breeders is improving the breed very much. In-breeding on the Island is not carried on in extent as formerly, as the Herd Books have corrected a great error, for formerly a man might breed brother to sister, not knowing their line of descent.

"There is not much tuberculosis; it is not often inherited; it comes on special animals from cold, etc.—not at all carried by contagion. Not much abortion there; a case is an exception. Abortion arises more from some fungus than from any other cause; never heard any complaints from it in Guernsey herds in England.

"The calves are kept thin because the desire is to sell as much butter as possible, and so they are fed on sour skimmed milk. But I bring mine up on the mother; I put two on one animal; I do not have much scours; if they do, I change them off to another cow, as I would with a healthy calf; changing may produce it there. Sterility is not common, such cows are called barren; when they are called 'roarers' and get to bulling every day, we generally send them to the butcher, or feed them off for beef.

"The animals that are brought over are very good representatives as a class. Some very fine animals can still be had for 120 Pounds. There are some very superior herds in England, because the breeder buys three or four and breeds up with care and to maintain a family likeness. But the Island breeder, breeding for sale, sells often the best and buys from others, and thus family likeness is not much maintained on the Island.

Butter, when I left, was about 26 pence, Jersey cheaper, say about 18 pence. Bread and butter are a mainstay with our people, not much meat used with the poorer people. Breeders are improving in endeavoring to increase the yields of milk very much now, the stimulus of tests acting favorably; we must breed now to make high averages in our herds, and do not so much care for the sensational amounts of forty pounds, but we will not give them

the stimulating foods reported here. Mr. James thinks more of carrots for butter, parsnips for beef. He raises many carrots. Likes to see a calf in good, fine condition. Does not think the carrots or parsnips cause the coloring matter in the skin, it is the peculiar herbage on account of the soil.

"England is the market, and the Guernsey breeder sees it to his advantage to breed to suit his customers. The colors should be maintained, and while I much like the brindle, and would like to have a herd of them, still I would not mix the two. The brindle is fancied to be the hardiest, and it is a great mistake to discard the brindle marks. There are brindles with white noses, and there are orange fawns with black noses. There is no objection to the black noses, as we cannot breed true to either color. I would prefer to breed a heifer at two years, but would not object to a year and nine months; eighteen months is really too young. May commence with a bull twelve to fourteen months old. Beef is usually fed up for sale at Christmas. The mixture of fat with the lean is extraordinary, and of the finest flavor. Parsnips are the best food for making rich beef, but oil-meal makes our beef too rich."

Mr. Paul asked a question about serving cows, whether feeding ground oats in winter and summer, say in winter three quarts of corn and oats, and three of bran, would prevent cows getting in calf? He and his neighbors who had the same experience with their Jerseys, fed oats all the year through, and though regular breeders before feeding the oats, they required several services to get them in calf—the majority of them. Is oats bad in its effects upon the breeding organs? Mr. James feeds oats regularly and had no difficulty, but prefers one-half cotton-seed and one-half corn-meal. Mr. Blight was surprised at the question; oats is the food for horses, not for milch feed. It would increase the strength, and perhaps, divert the breeding qualities.

The meeting adjourned to view the fine stock of cattle; about one dozen of very choice specimens, with full developed escutch eons, were shown, which any breeder would be proud to own.

W. P. HAZARD, Secretary.

Minutes of Meeting held Eleventh Month 20th, 1885.

The meeting convened at the Agricultural Society rooms, in Philadelphia, November 20th, 1885. Pennock Sharpless was elected a member.

Committee on Testing gave a partial report, and the details of making a test were discussed. This brought up some recent tests by the Canadian professor, and Mr. Betts said he had watched the papers and had seen the names of the other animals of the breeds tested, but he has never seen the name mentioned of the Guernsey said to have been tested ; he would like to know where she came from, her pedigree, age and condition. He does not believe the professor had a thoroughbred Guernsey. He alluded to tests of milk made in Jersey from twelve different dairies, collected each month for a year ; Professor Cook published these tests, and they were very different from the Canada test. One of the committee to collect the milk was arrested for selling poor quality of milk, below the standard. They came to Mr. Betts's house, stirred the milk and took specimens of average quality, questioned about the feed, the quantity of milk yielded, etc., and sent it to Professor Cook. His herd of twenty Guernseys and ten Jerseys, moderately fed, showed a result of the whole herd, for the twelve months, of slightly above fourteen per centum solids. He never knew Guernsey milk to be less than fourteen per centum, and has known it to be sixteen per centum. In the two Canada analyses the two vary and Mr. Fuller seemed amazed and sent two picked Jerseys to hold up the breed. No question there are many first-rate Jerseys, and he did not pretend to claim all Guernseys to be better than all Jerseys.

W. M. Paul thought the outside world was affected by these statements and we should correct such by these statements of facts ; by the exhibition of our stock at fairs, and by having tests made.

Mr. Betts said these large amounts are all produced by professional men who have used extraordinary means to produce these results. But you cannot point to a single large test by a practical man who makes his living by the yields of his cows.

Alexander Scott said one of his neighbors at Willistown makes the extraordinary statement that the vendor of a patent took twenty quarts of Evans's milk, put in the churn with it some material, and in five minutes' churning produced thirty pounds of butter from it. It was a fair looking article and would sell.

Mr. Hazard, by request, gave a short account of his trip to South Carolina to the State Fair; of the great excellence of the exhibit, the grounds and buildings, and several Guernsey herds of very choice animals, as well as the fine specimens of thoroughbreds of other breeds; also of the progress of agriculture in that State, their attention to raising a variety of grasses and cattle foods, and the want of good labor with which to advance the agricultural interests, and also of the new South and the rapid progress they were making.

Mr. Betts introduced the question of the different value of milks; that he thought people could be educated to pay a larger price for the better qualities of milk. He should like to hear an essay by George Abbott upon the subject. Hereupon George Abbott, Jr., was appointed to read an essay upon this subject at the next meeting. Mr. Abbott alluded to the tests that had been spoken of, and also thought tests at shows should be accepted with care, as animals were affected by their different temperament.

W. P. HAZARD, Secretary.

Minutes of Meeting held Twelfth Month 11th, 1885.

The December meeting was held at the Philadelphia rooms, Friday, December 11th, 1885.

After some preliminary discussion on business matters, the question of feeding pumpkins came up. Alexander Scott said that when he sold butter in the market his customers would commend his butter when he fed pumpkins. W. M. Paul said a member of the American Guernsey Cattle Club had said at the annual meeting that his commission man had sent him word to stop when he began to feed pumpkins.

S. C. Kent instanced a cow that was taken away from the herd that was being fed upon pumpkins, and her milk fell off nearly one-half. But after awhile nearly all came back.

Mr. Harvey said a pound of butter could be made from a quart of milk, if there was a little alum put in it. He thought most of the big tests were the result of improper processes adopted by the herdsmen, with a view of pleasing their employers. Water would help the cream to rise faster, but the water and the milk must be of the same temperature.

A discussion then followed as to the rules to be adopted to govern the accuracy of the tests to be made of milk and of skimmed milk.

George Abbott, Jr., then read the excellent essay on Milk; relative value of the product of different breeds, and possibility of obtaining an increased price for an improved article. Then Mr. Betts asked Mr. Abbott if the customers use both milk and cream among the bulk of the community. Mr. Abbott thought not, milk generally was sold, and in many cases was set and the cream taken from it. In some cases he thought boarding-house keepers used the Guernsey or Jersey milk as cream instead of buying cream. Mr. Betts thought families could be educated. At first some of his customers wanted cream, but he told them he did not and could not sell cream because it was in the milk. That they should buy more milk and set it themselves and skim it, so now many do, and that makes an increased demand for more good milk. This makes them discriminate and they want the best milk. But where they use the whole milk they are not so particular in buying. If he could furnish enough of this rich milk he could enlarge the sale to any extent, and mainly by educating the community. As it is he never has enough. The using of cream is an infallible test of the quality, and thus they can buy the best, while they cannot of sugar, molasses, spices, etc. Mr. Betts gets a uniform price all the year round of eight cents, while Camden is supplied at six cents the year round with the ordinary milk; a large portion is sold by the dealers at six cents, but the balance being best, will bring eight cents, and he believes he could get a still higher price for such good milk, as the demand is ahead of the supply. A family will pay two cents more when they know the milk is worth it; this is from instructing them how to set it, to compare with others, and so they soon determine to have the best. Then they will not go back to the poor milk, and so they have cream and milk also.

George Abbott had noticed when breeders first begin to sell their Guernsey and Jersey milk they think it worth twice that of others. While these milks are worth twenty-five per cent. more than others, yet this does not represent the true value; for the solids, not fat of all milks are of about equal value; it is the cheesy portions that make the bone and muscle. The Guernsey and Jersey milks will always analyze about fifteen per cent. and common milk thirteen per cent. solids, the difference being in the fats. This corresponds with Mr. Betts's statement that the skimmed milk will be of more value than common milk; so the buyer will get his cream

and his good skimmed milk. The cream test is not only the best, but the only true one.

The fats of milks would be about as five common to three Guernsey and Jersey ; while the amount of fat would be greater in the rich milks, the amount of solids would also be more; so that the best milks are the cheapest. The point I make is that persons who raise the Guernsey and Jersey milk should not overestimate its value and keep it out of the milk market. The Guernsey therefore will be the best milk to buy and use, because as the fat or cream cannot be all gotten out of it, he will have rich cream and rich bodied milk.

W. P. HAZARD, Secretary.

Minutes of Meeting held First Month 25th, 1886.

The annual meeting of the Guernsey Breeders' Association was held in the room at 244 South Third Street, on Monday, January 25th, 1886, Vice President George Blight in the chair. By his request, J. J. Sleeper acted as Secretary pro tem. There being no minutes present the reading was postponed. The President having entered, took the chair. As no committees were ready to report, it was decided to go into the election of officers. Henry Palmer was nominated for President, but declined ; William Paul was then nominated. George Blight and E. Michener were nominated for Vice Presidents. George Abbott, Jr., was nominated for Secretary, but declined, when J. J. Sleeper was nominated. He stated that he was not a member of the Association ; as there were no others he allowed his name to stand. Samuel C. Kent was nominated for Treasurer. For Executive Committee, W. M. Paul, George Blight, E. Michener, J. J. Sleeper, S. C. Kent, H. Palmer, F. M. Etting, Silas Betts, and John C. Higgins were nominated. By motion of George Blight, the Secretary was instructed to cast the ballot for the Association, which he did, and the President declared them the officers for the ensuing year. William Paul then took the chair and made some remarks.

On motion of Mr. Palmer, delegates were appointed to attend the meeting of the New Jersey State Board of Agriculture. The President, W. M. Paul, Mr. Betts, and E. T. Gill were selected, with power to add to their number.

Mr. T. M. Harvey announced the meeting of the Farmers' Institute at Oxford on the 25th and 26th; all were invited. Mr. Betts commended these Institutes, and hoped all who could would attend. Mr. Hazard then announced the meeting of the State Dairy Association at Meadville, on February 8th, 9th and 10th. Messrs. R. H. Hodgson and T. M. Harvey were appointed delegates. Upon the suggestion of Mr. Harvey, the places of meeting were talked about. There seemed to be nearly if not quite a unanimous feeling that the meetings should be held at the residences of the members, at least in the summer season.

Mr. Hazard called attention to the "Journal," and said his time was so occupied with other matters that he would be compelled to relinquish the editing of the "Journal" and Secretary of the Association. Since the last "Journal" had been sent, he had received several letters of regret, and some offered to furnish money if that was needed to keep it going. He then read several letters showing the importance of continuing. He was willing to aid in any way he could, but not to be depended on for regular stated work. Mr. Betts made a motion that a committee be appointed to provide for the continuance of the "Journal." Several members spoke in favor of continuing. J. C. Higgins said he would like to see each member have so many copies, to act as distributing agents. He said that the "Journal" must be continued; that there are deep wells of information in this club which have not been exhausted by any means. Mr. Blight said he had been to see the editor of the "Practical Farmer," but they were not willing to give the space it would demand. Others were doubtless of the same opinion, and for this and other reasons, I think we should have a "Journal" of our own. Mr. Betts said he did not think we could find any paper that would answer our purpose. Mr. Hodgson wanted to know just what we could do, and suggested that the whole matter be left to the Executive Committee. Mr. Betts said he wanted the whole matter thoroughly discussed. It was then decided that five persons be appointed by the President; (an amendment); Messrs. H. Palmer, S. Betts, S. C. Kent, J. C. Higgins, and W. P. Hazard, were appointed. W. M. Paul was added.

Some discussion followed as to the price of the "Journal;" the majority seemed to favor one dollar or more. On motion, the Secretary was requested to call the names of the members to see how much they would subscribe, to be returned in "Journals" at one dollar per year. One hundred and eighty-five dollars was subscribed. Mr. Hodgson said he was willing to double his if that was

needed. Mr. Hodgson moved that each member pledge himself to give ten dollars towards the publication fund. The President requested a rising vote. As it was not unanimous he decided the Club could not take such action. Mr. Betts said he did not think the committee will have authority to do anything before next meeting. Mr. Abbott suggested that the committee should send a circular to each member of the Club, asking what amount they would be willing to subscribe, The whole subject was then laid on the table. On motion of Mr. Betts, the Secretary was directed to furnish reporters a synopsis of the proceedings of the meetings.

W. P. HAZARD, Secretary.

Minutes of Meeting held Second Month 6th, 1886.

The Guernsey Breeders' Association met at 244 South Third Street, Philadelphia, Second Month 6th, 1886, and was called to order by William M. Paul, President. The minutes of the preceding meeting were then read. The newly elected Secretary, J. J. Sleeper, deslring to resign his office, his request was granted. William B. Harvey was nominated and unanimously elected for the position; he was also elected a member of the Executive Committee in place of J. J. Sleeper, who was elected an honorary member of the Association.

Silas Betts, on behalf of the "Journal" committee, said that W. P. Hazard had corresponded with Mason C. Weld to see whether he would assist in some manner with the publication. A reply was sent in which M. C. Weld offered to edit a paper, if the Guernsey Breeders would guarantee six hundred dollars, or six hundred copies of the "Journal." It seemed that its scope should be widened, it being rather heavy on us, and it would give it more weight in large form. It was the decision of the committee that we unite with the American Guernsey Cattle Club, and breeders generally. That a committee be appointed in which the National Club be represented, and a circular be sent out to all Guernsey breeders to solicit subscriptions for a sixteen page periodical.

Edward Norton, Secretary of the Cattle Club, was present at the meeting, and said that he had received a letter from M. C. Weld in regard to the "Journal"; that at a meeting of the Execu-

tive Committee of the Club in Boston, held shortly before the date of our meeting, he was authorized to come here and report their sentiments. The Club, he stated, would undertake the matter if we gave it up, but did not care to interfere with us at present. They do not want it to be a local affair, but rather National in its scope; that M. Weld should be independent after its commencement, and that the amount asked for should be raised; that a committee be appointed to see that the "Journal" start right; that the American Guernsey Cattle Club would help collect money, etc. Secretary Norton thought M. C. Weld was entirely competent to undertake the matter. It was decided that the report of the committee be accepted.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Third Month 12th, 1886.

A meeting of the Association was held on the 12th of Third Month, 1886, at 244 South Third Street, Philadelphia. The President, W. M. Paul, of Moorestown, New Jersey, occupied the chair. The minutes of the preceding meeting were approved, and R. H. Page, Jr., of Columbus, New Jersey, was elected a member.

In the course of a discussion of the subject of oleomargarine, one speaker said he thought at times that he was himself using the article, and paying seventy-five cents a pound for it. The frequent use of dirty and injurious substances in its manufacture was demonstrated.

Silas Betts, of Camden, of the Publication Committee, reported having met the President and Secretary of the Guernsey Cattle Club in New York, and that they had seen Mason C. Weld, and though the subscriptions had not quite reached the figure set, they had arranged for the publication of the "Journal."

Willis P. Hazard, of West Chester, reported having attended the meeting of the State Dairyman's Association as a delegate of this Association. The attendance was very large, and the proceedings of an interesting and instructive nature.

John L. Balderston, of Kennett Square, asked if it were possible for six quarts of natural milk to yield a pound of butter. An account of such a yield had been published, but it seemed too rich to credit. Ezra Michener, of Carversville, said that a heifer of his

last year gave milk which was seventy per cent. cream, but three days after it fell off thirty per cent. The actual amount of butter was not stated.

W. P. Hazard introduced the subject of the artificial dilation of the os uteris to promote conception. He explained the process thus: Take a piece of soft, moistened sponge of suitable size, wind it around with a cord, so that it takes about the size and shape of a cat-tail head. After becoming thoroughly dry, the string may be removed, and the sponge will retain the form given it. Then at the time of heat, insert the sponge in the os uteris, leaving it there until the next heat. It will absorb moisture and expand, effecting the desired dilation. When it is withdrawn, the cow should be served at once. He said the operation generally resulted satisfactorily.

In response to an inquiry about ropy milk, Thomas M. Harvey stated that some years ago there was trouble with the milk at Westtown School, Chester County. Dr. Leffman was consulted. It seems that the milk kept at the dairy house was apparently all right, but when taken to the school, a short distance away, it became ropy. The speaker thought it attributable to a change of temperature, that at the school not being right; but Dr. Leffman's view was that the trouble was due to stagnant water in the meadow. No such water, however, could be discovered.

W. M. Paul reported some interesting tests which he had been conducting in his herd. The food was by no means excessive, and the results highly gratifying, and, it is expected will be fully reported in due time. His action was commended to others as worthy of imitation, as tests are greatly needed, that our cows may be chosen from the best producers, and the light workers culled out.

The Association listened to an interesting paper by W. P. Hazard on "Grading up Stock." It was highly commended, and a copy requested for publication. Isaac Nicholson says that he finds his three-quarters Guernsey heifers better than any he has ever raised of other breeds; superior to his Jersey grades for milk. He favors for breeding grades, fine-bred, good bodied bulls, with fine hair and skin, not heavy in the neck, and not having the hair of the neck curly.

The subject of abortion was selected for discussion at our next meeting, which was appointed to be held at Thomas M. Harvey's, West Grove, Pa., on the evening of Fourth Month 26th, previous to the sale of his stock on the following day.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fourth Month 26th, 1886.

The Guernsey Breeders' Association met in the hall at West Grove on Second-day evening, Fourth Month 26th, 1886, with a very liberal attendance from Philadelphia, New Jersey, and various parts of the State. After the reading of the minutes by W. P. Hazard, he (William B. Harvey desiring to be excused from acting as Secretary) referred to the recent death of Thomas M. Harvey, as follows:

"This Association has recently met with such a loss, not only one of its most valued members, but one of its founders; and I have worked with him so much side by side, that I cannot forbear to express at this, our first meeting since his death, the deep feelings of sorrow with which I am sure all present will coincide.

"At the last meeting of this Association, held but a little more than a month ago, Thomas M. Harvey arose and announced to us that he had determined to relinquish the care of his farm, and discontinue the breeding and rearing of the breed of cattle he loved so well, and for which he had done so much. At the same time he extended an invitation for us to meet at this place, and in addition to holding the regular monthly meeting, witness the dispersion of his herd. It is in accordance with that invitation that we are here, but alas, he who was to have been our host, is absent from our meeting and ever will be. You may all remember what pleasure it gave him to have his invitation promptly accepted, and that we showed his step, important to himself, was an important one to the community also. Little did either this Association or Mr. Harvey think the giving up of his many earthly cares would be final and eternal.

"I felt, and you all who knew him must have felt, that a great and good man had fallen. Great in the simplicity and purity of his character, and good in all his intents, purposes and actions. Every man has at least one strong point in his character, and which is most likely to shape his actions, whether for good or for evil. The strong point and guiding rule with Thomas Harvey was his strong probity. Unassuming, retiring, and modest in his entire deportment, yet being guided by the inner light, his probity made him weigh every word and action, that he might be just to all men. Yet this same guiding rule made him bold, brave and outspoken in the cause of truth, and he gave freely of his time and money to right whatever he thought was wrong. Honest and upright in all his dealings, anyone could buy of him with abiding confidence; he scorned the petty meannesses or trade and barter.

"Foremost in doing whatever good that came in his way, he was a valued member of society, and will be missed in many walks of life. As an agriculturist he was practical and thorough, seeking below the surface and ready at all times to yield up his ripe experience, and to further the cause of agriculture with his pen, his time and his means. I think he looked forward to being yet more useful in a public way, as his retirement would let him. As a horticulturist he was observing, patient and willing to experiment, and originated many new ideas. As a breeder of fine stock he early took hold of the Jersey breed, and advanced it by development, until feeling assured of the superiority of the Guernsey, as the most suitable for practical farmers and dairymen, he devoted much time, great skill, and gathered experience in rearing the best and making the breed widely known and appreciated. As he was among the first to develop this breed in this country, so he was one of the founders and long a director in the American Guernsey Cattle Club, and more recently of this Guernsey Breeders' Association. As a writer for the agricultural press, his writings were terse, clear, and full of wisdom. He was a thoroughly consistent member of the Society of Friends, living fully up to their principles, and therefore a valued member of it.

"At this meeting, upon his retirement from the active cares of a life of usefulness, it had been intended by several of us that we should take such notice of it as would show our respect and esteem for the man, our appreciation of his labors and our regret at the step he thought best to make. Alas, how changed are our plans, and our loss is absolute. I therefore beg that the following or some similar resolutions may be adopted by this meeting:

WHEREAS, Thomas M. Harvey has been stricken down by death suddenly in the midst of his usefulness; be it

RESOLVED, That the Guernsey Breeders' Association, of which he was an active and valued member, place upon its records this expression of the great loss to the Association, from the withdrawal of his presence, his counsel and his experience.

RESOLVED, That we do deeply sympathize with his family and this community, deprived of the example of a man who had led such a blameless and useful life in their midst, and of his active participation in every good work.

The resolutions were seconded by Silas Betts, of Camden, as follows: "We all appreciate the address as well as the subject. He was one of the originators of the American Guernsey Cattle Club and one of the first to breed Guernseys and bring them to public notice. He was a benefactor of his race; one of those who

reach out beyond self. When I first met him to consult in regard to the organization of the Club, we both agreed an effort should be made. We met several gentlemen of New England, and they had made some preliminary organization. At that meeting Mr. Harvey gave his own views, and we accepted the preliminary organization. Mr. Harvey was a man of great self denial. He did not work for himself. When he gave his time to improve Guernsey cattle, it was for the benefit of others more than himself; I have always found him a deep thinker, an honest man, and we all honor him. I cordially coincide with the sentiments expressed, and hope the resolution will be adopted."

Unanimously adopted.

W. P. HAZARD, Secretary pro tem.

Minutes of Meeting held Sixth Month 7th, 1886.

The Guernsey Breeders' Association met at the Girard House, Philadelphia, on the evening of Sixth Month 7th, 1886. The minutes or the preceding meeting were read and adopted. Samuel P. Webb, Parkerville, Pa.; John Bishop, Columbus, N. J.; James Logan Fisher, Crescentville, Pa., were nominated members of the Club. The subject of feeding calves was continued from last meeting.

W. P. Hazard thought we must look to the dam, get good constitution, feed her properly, and then try to follow nature as near as possible; give calves their food little and often as in nature. By giving the food only twice a day the calf gets too much. If left to suck the cow, unless part of the milk is drawn, we have the same difficulty. The milk from a fresh cow is liable to be feverish. Keep the calf in fresh air, though keep it from the draughts. It should not be kept in wet quarters. He thought the calf should be put with the cow at least four times per day; that before and after calving, the cow should have light diet, and especially is it necessary in the case of Guernseys. It is sometimes the practice to thin the milk by adding water.

Colonel Etting said he used common or grade cows for foster mothers; he kept the calves on them sometimes until six weeks old. Silas Betts said he did not keep the calf on the cow for its benefit; it was only when the cow needed the calf that he prac-

ticed this method. He thought calves should be taken away from the cows when twenty-four hours old. He thought very much depended on the care that was taken of the calves. There is a great difference in men to whom the calves are intrusted. One man will watch, and when they act or look sickly, will alter the diet, and use remedies in season; another attendant will go on just the same until the calf is down or refuses to eat. More depends on the man than on the medicines, though they are of much benefit when properly administered. Gum arabic dissolved in water, mixed with powdered chalk, if given at the outset, is a very good remedy for scours. Pulsatilla and nux vomica, third dilution, in five-drop doses, is highly recommended. The temperature of the milk has much to do with the health of calves. A difference of fifteen to twenty degrees is very injurious.

Silas Betts thought more depended on the feed for the first year in determining the character of the animal than all that could be done during the remainder of its life. Do not over-feed, but give just enough to keep up the health and vigor of the animal. The size will come. S. Betts advised aconite or witch hazel as remedies for some kinds of scours. When there is inflammation, then something soothing is needed. Scalded milk, not boiled, was recommended; he said "mercurius vivus" was excellent in diarrhœa, especially when there was a bloody flux. He never knew it to fail.

Dr. Sleeper explained the method of making a flour ball, so effective in curing scours in calves. Put some flour into a bag or cloth and boil till dry, for about six hours. A crust will be found on the outside about half an inch thick. Take this off and grate up the inside, and mix to a porridge with scalding milk.

Samuel Hughes thought practice and experience was of more account than any thing else in raising calves. A well calf should have about three quarts of milk three times per day. Samuel C. Kent never had better success with calves than when in quarantine; he allowed the little things to run at large. They got what they wanted and were not troubled with scours. Mark Hughes thought that the success in raising calves in quarantine was that the cows were not in high condition when they calved.

William B. Harvey thought cows should be kept on light diet for at least two months before calving. Calves should be allowed mother's milk in moderation for two weeks, then be weaned, using new milk at first, adding sweet skim milk, and increasing the latter by degrees, until it constitutes the whole milk ration. In place of

the new milk he used linseed oil, cake meal and good wheat middlings, about one-third oil meal and three-thirds middlings, also some corn and oats ground fine. Oats, unless thus ground, are by no means fit for young calves.

Elwood Balderston fed scalded skim milk until two months old, then used clabber. He scalded by setting the milk In a vessel of boiling water. It was generally thought that the proper temperature to feed milk to calves was from eighty-five to ninety degrees. The temperature of the cow is from one hundred to one hundred and three degrees. Joseph Evans thought our high bred cows being such persistent milkers, were not as liable to have as large, thrifty calves as some that performed less at the pail.

At this time a recess was ordered that the inner man might be satisfied. The members and other guests were conducted to the Girard House dining room, where a supper at which the most fastidious must have been pleased was supplied by the generous contributors to the to-morrow's sale. (S. C. Kent's, at Herkness' Bazaar) That over, those present were entertained by appropriate speeches by the members of the Association and some others.

After this, members were feeling disinclined to talk, and the hour being late, but little business was transacted, and the meeting adjourned, to meet at J. C. Higgins's, the subject for discussion and date of our meeting being left to his decision.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Seventh Month 16th, 1886.

The Guernsey Breeders' Association met at the residence of J. C. Higgins, near Delaware City, on the 16th of Seventh Month, 1886. The Secretary being absent, John L. Balderston was requested to act in that capacity. The minutes of the preceding meeting were read and adopted, and Samuel P. Webb, of Parkerville, Pa.; John Bishop, of Columbus, N. J.; and James Logan Fisher, of Crescentville, Philadelphia, nominated at last meeting, were elected members of the Association.

Silas Betts inquired of George Abbott, Jr., as to what effect the carriage of milk over a city milk route has in diminishing the quantity of butter which may be made from the milk. He replied that in his experience, if skimmed and churned, the loss in weight

of butter would be perhaps twenty-five per cent. Silas Betts had had some experience lately in the matter, and was surprised at the poorness of the yield of butter from milk known to be of good quality.

The meeting then adjourned at the invitation of our host, to test the table fare of products of the State of Delaware, as set forth in the dining room. The results were particularly satisfactory and satisfying to each individual.

After reassembling, the host opened the discussion by reading an able paper on the line of breeding which should be followed for the improvement of Guernsey cattle. W. P. Hazard said he was glad to find our host coming over to the ranks of those favoring moderate inbreeding. He thought that one point we should especially direct our attention to, was testing for butter as a starting point, and was glad to notice that some good tests have lately been published in England and Guernsey.

George Blight said that he had noticed many good bulls sacrificed because their owners did not wish to breed them to their own heifers. If inbreeding is not to be feared, this cause of loss may be removed.

Silas Betts thought we should meet as breeders, with the leading idea always the improvement of our stock, not the commercial idea of enhancing the value of the stock on hand. He also called attention to a point made by Willis P. Hazard, that the most remarkable cow, as shown by her individual test, may not be so valuable to breed from as one of less individual merit; the former may be the result of a favorable "nick" in crossing, or even a sport or exception in an otherwise poor family, and the second may come from a line showing generations of unbroken superiority. The exceptional cow of the poor family will probably breed poor cows like her family; the other will probably breed good ones like her ancestors if only properly mated. He instanced the famous cow "Jersey Belle," of Scituate, being herself inbred for several generations. She was for several years bred at random, out of her own family, and her calves were a disappointment; but being eventually bred to a bull of her own family, brought calves of great promise. He also said that we must get rid of the idea that all registered animals must be bred from. When we become brave enough to cull our heifer calves judiciously, we shall be on the road to progress.

The host said that it had cost him something, because he had not been more firm in his faith in the Guenon theory. He found that, among the cattle bought before he had much faith in it,

those showing good escutcheons turned out well, and those poorly marked had proved to be poor cows.

Dr. Stewart raised the question whether it were not better to let heifers run over a year without breeding, after the first calf, to enable their frames to become fully developed.

Isaac Nicholson was asked the average time during which a cow was profitable. He thought until an average age of thirteen years.

A neighbor entered an earnest protest against the theory of in-breeding as a new and dangerous doctrine, but was shown that it was not new, but the practice of all famous breeders for a century.

JOHN L. BALDERSTON, Secretary pro tem.

Minutes of Meeting held Tenth Month 15th, 1886.

A meeting of the Guernsey Breeders' Association was held in their room, 244 South Third Street, Philadelphia, Tenth Month 15th, 1886. The minutes of the previous meeting were read and adopted, and William Willets and E. D. Warner were elected members. W. M. Paul gave some interesting facts in regard to the Bay State show at Boston. He reports that the Guernseys were represented in their true colors, some very choice herds being exhibited. Jessie, of Lester Manor, took sweepstakes and first over all Guernseys and over all other breeds as a dairy cow. Picotte 2nd won sweepstakes over all breeds. Jersey and Short Horn breeders were judges. The animals created much lively interest, and many converts were made.

George Blight, who was at the York County fair, said the exhibition of our favorite stock was small, though there was a demand for more.

W. P. Hazard reported attending the exhibition at Washington, Pa., and the Lehigh Valley fair; saw some very good Guernseys and the people were ripe for information.

W. M. Paul told of a man from Connecticut who used grade Jerseys in his dairy, but thought them too small, and he was getting in the notion of Guernseys.

Our President read an interesting letter from the Island of Guernsey, in which it was stated that the cattle trade during the summer had been dull, but that it had improved, that the demand

was principally in England, where Guernseys are gaining ground fast, while Jerseys have rather a retrograde motion. Cattle on the Island are increasing in price. Prices of heifers in calf were stated to be twenty-five to thirty Pounds; good yearling heifers from sixteen to twenty-three Pounds; bulls ten to fifteen Pounds.

W. B. Harvey asked for the views of the members as regards feeding cut-feed hot, tepid and cold, whether better results were not attainable by warm food. The last had been his practice. Different views were expressed. W. P. Hazard feeds corn, oats and bran, and flaxseed meal in moderate quantities; opposed to feeding slops, as it prevented the gastric juice from acting, and, as in the case of the person who drinks too much liquid, is apt to cause stomach troubles like dyspepsia.

Joseph Evans, asked, why not use dry food? He did not cut his hay at all, and did not think it paid to feed moistened food. George Blight thought cut fodder made very good feed, that it ought to be steamed; it, however, made light colored butter. John L. Balderston thought moderation was good, that cows like a change. They should be fed three times a day. He used ensilage once a day, and thought it was of decided advantage in causing heifers to cast the placenta. Out of twenty heifer calves which he raised on it, only one failed to clean when they came fresh. Previous to this feed he had experienced difficulty in this particular.

Isaac Nicholson cuts his stalks. He said the only portion left was the pithy part just above the ears; he thought it much more economical. By analysis, corn fodder is very rich in phosphoric acid, and the best part is below the ear.

A case was stated of a man who, by the old method of using long stalks and uncut hay, would have barely enough provender to carry his stock through the winter; by purchasing a cutting machine, he had, after using it during the winter, $500 worth of hay to sell—quite an item. He thought very well of soil corn, and held that it was as good as the best hay. He uses cold water in mixing his feed, and stated that a number of persons tried steaming the food for their cattle, and they all said that they lost their labor, fuel, and in some instances brought on disease.

William Paul uses sugar corn largely for his cows, leaving it in the field until near the time for using it, then hauls it to the barn a load at a time.

Alexander Scott wets his feed with cold water, not only for cows but for horses too. He gives cut feed and says he can save twenty-five per cent. by the method. He mentioned a neighbor

who "hooted" at it, but on loaning him a cutter he became converted and bought one for himself.

John C. Higgins asked whether timothy hay was the right kind to feed cows. Alexander Scott thought there was very little difference by chemical analysis.

William Paul asked Isaac Nicholson if corn fodder could be used alone, but was answered that some hay was preferable. John C. Higgins prefers Alsike clover (theoretically); cut for seed it gave nitrogen equal to one-half ton per acre of Peruvian guano. William Paul uses Alsike clover on low ground and thought it would not grow on high ground. He thought it lasted in the soil about as long as ordinary clover.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eleventh Month 12th, 1886.

The Guernsey Breeders' Association met at 244 South Third Street, Philadelphia, Eleventh Month 12th, 1886, with a fair attendance. The minutes of the previous meeting were read and adopted. An interesting article by E. W Stewart was read, in regard to feeding for manure.

W. P. Hazard, who was recently at the State Fair at Columbia, S. C., stated that Guernseys had improved there very much, and that they were in demand. George Abbott, Jr., gave an account of his recent visit to the Channel Islands. He stated that agriculture was prosperous, that the crops were good, as were also the houses; he drove around for a day on Guernsey seeing the cattle and the island. One of the most prominent breeders, who had paid 200 Pounds sterling per acre for his farm, was getting but one shilling six pence (35 cents) for his butter. Very little of this article is exported, nearly all being needed at home. The Guernsey men are anxious to see American buyers. He thought the udders of cows on the island were better than with us; among all that he saw very few were imperfect. On Jersey he found that trade had been dull, though improving. The islanders grumble considerably about the stringent rules laid down by the American Jersey Cattle Club.

Silas Betts told more in regard to the Bay State show. The exhibits were entirely of agricultural products; the cattle were

in the basement. There was no horse racing, beer drinking or smoking allowed.

W. B. Harvey opened the subject for discussion, viz: "Individual Merit and Quality versus Fancy Points in Starting a Herd of Guernseys." He stated some general points in regard to working animals, favoring cows according to their individual merit, whether fawn, brindle, red or dark, light noses or dark, though, all things being equal, he preferred those of orange or lemon, fawn and white color, and buff noses. In regard to the bull he was especially particular, regarding him as a most important factor in the make up of the herd. We must breed for quality, otherwise in breeding for fancy points we will drift into a breed of beautiful cattle but at the pail will be met with disappointment. He said he would by no means discard a good cow because she possessed a dark nose, and instanced a dam of a noted family which had a dark nose, while all her progeny had light ones.

W. M. Paul had some dark nosed cows, and would not eliminate them, because they were good; he recognized quality and wanted a working herd. He had paid high prices for dark nosed cattle.

Silas Betts said that the element of beauty had much influence in price with people; even he was influenced by it, although he would not sacrifice a first-class Guernsey with a dark nose. He thought the bull would effect the greatest change in a herd. We should pay particular attention to him, both as to his breeding and his individual merits. A rich skin is the distinguishing quality of Guernseys, and a very necessary feature.

Joseph Evans said he could not like a Guernsey cow unless she looked like one, although she might be a good animal. W. M. Paul said we should either eliminate the dark colors, else acknowledge them; that leading breeders breed dark nosed cattle. He asked W. P. Hazard whether the islanders in trying to get up handsome cattle for American buyers had not allowed the animals to deteriorate, and was answered that in his judgment they had.

W. M. Paul thought Guernseys were originally brought to America on account of their great richness, that they had not gained ground by their beauty.

W. P. Hazard preferred light noses from a commercial point of view, though for practical purposes he did not object to dark ones. Silas Betts asked whether a bull should have square quarters or pointed. Joseph Evans preferred pointed, though not too sharp at hips.

George Abbot, Jr., mentioned a case where one man had paid strict attention to points, breeding for beauty; gradually his milk deteriorated in quality very materially. Another, breeding for utility, had paid attention to the working organs of his purchases, consequently was every year improving his herd.

It was decided to discuss at our next meeting. "Will Ensilage or any Other Feed Maintain the Color of the Skin and Milk in Winter?"

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Twelfth Month 10th, 1886.

The Guernsey Breeders' Association met at the rooms of the Philadelphia Agricultural Society, at 10.30 A. M., Friday, December 10th, 1886.

In the absence of Secretary Harvey, Silas Betts acted as Secretary pro tem. By vote, the reading of the minutes of the previous meeting was omitted.

Mr. Higgins spoke of the value of the Guernsey Breeders' Association "Journal." He thought it well conducted, and believed it worthy of the support of every breeder. He urgently commended the "Journal" to the members of the Association, and expressed the hope that the breeders of Guernsey cattle would communicate with its editor, giving their experiences with Guernseys, the effect of certain lines of breeding, methods of rearing and breeding, so that all of its readers might receive valuable instruction.

The Secretary read the letter of L. W. Ledyard, from the "Country Gentleman," giving the butter record from his imported cow, "Fernwood Lily." This cow gave 350¾ pounds of milk and made 22 pounds 11¼ ounces of butter in seven days. Her feed consisted of ten quarts of corn meal, an equal weight of wheat bran, and a handful of oil meal every twenty-four hours for three days. Besides this, she had her usual ration of hay. The remaining days she received her usual rations of eight pounds of corn meal and the same of bran.

Mr. George Abbott stated that so far as he could learn during a recent visit to London, very little distinction was made by the milk dealers of that city in the price of their milk; the poorest qualities bringing about the same price as the rich ones. The only

difference he found was based upon sanitary inspection of the cows. Wherever such inspection was enforced the milk brought the highest prices. Mr. Abbott stated that there was less reason for such inspection in the vicinity of Philadelphia than in London. He gave it as his judgment that the milk supply of Philadelphia is the purest and best of any large city in the world. The milk of Guernsey and Jersey cattle is largely used and brings a higher price.

Mr. Benjamin Lippincott stated that his herd consisted of Guernsey and Jersey grades. He ships his milk to Atlantic City, where his dealer gives it a decided preference over common milk. He had common cows, and he gets as much in quantity from his grades, and this is greatly superior in quality.

George Abbott stated that the too common impression among farmers that registered Channel Island cattle give a smaller quantity than other cows during twelve months is an error that should be corrected. Several owners of herds of these cattle have assured him that this is a mistake. These gentlemen formerly owned well-selected herds of common cows, and they state that they get more pounds of milk than formerly. The registered cows continue in milk longer, and give a more uniform flow for each month—a great advantage to the producer as well as the consumer.

Mr. Paul stated that the tendency in New Jersey among farmers was to raise their own cattle, and few were now satisfied with any except good grades, and the only certain way to get these was by raising them on the owner's farm. Grade Guernseys and Jerseys are becoming more numerous and more popular every year. Most of the contagious diseases are disseminated by cattle driven from one section to another. Home breeding will improve the cattle and restrict the prevailing diseases.

The question of the day was then moved. It was: "The Effect of Different Feeds upon the Quality of Milk and Butter." Mr. Willis P. Hazard opened the discussion by stating that he claimed no knowledge from experience in feeding ensilage, but he had given the subject some attention. He had examined silos and noticed the effect of the feed. The conclusion of the best authorities is that corn should be nearly mature before cutting, and that it should be put into the silo slowly, and fed therefrom as part of the ration only. It is useful in about the same degree and for very similar reasons that fruit is good for man. Ensilage will impart a higher color to milk and promote the health of animals if fed with corn meal and other ground feed. George Abbott stated that three parties shipped milk to him whose cows were fed in part on ensil-

age. At one time there were some objections to the flavor of some of the milk, but this did not last. Sour ensilage, in his opinion, if fed before milking, would have a bad result. The chief benefit is in the color of the milk. It should be fed soon after milking, and be mixed with other feed. Too much of any one of many kinds of feed given before milking would impart a disagreeable flavor to the milk.

Mr. Higgins spoke of the necessity of giving more attention to variety in the ration. The feed of animals to be most profitable should be based upon a knowledge of the elements of food and its adaptation to promote the health and growth of the animal. The products desired should also influence the character of the ration. Bone, muscle and fat can only be produced by feed that contains the elements of these substances. To combine them in proper proportions prevents waste and promotes health. A complete ration is one that, while it promotes growth, prevents waste, and gives the largest results in the products desired, whether beef, milk, or butter. He earnestly recommended the study of Prof. Stewart's work on feeding.

Alexander Scott would not feed linseed oil-cake for butter. Cotton-seed meal can be fed safely in small quantities. He feeds two quarts corn meal, one pint cotton-seed meal, and six quarts wheat bran mixed, or in these proportions. Cotton-seed meal increases the color and quantity of the cream. He also stated that there is little difference in the results of feeding good timothy hay and clover. This he had learned by trial in his herd. In recent tests of milk at the creamery at Ward, Delaware County, Pa., the percentage of cream from different herds varied from eight to twenty-eight per cent., the highest per centages being from Guernsey and Jersey herds.

George Abbott stated that there was no objectionable taste in milk from cows fed on cotton-seed meal mixed with other feed. Mr. Tomlinson feeds six pounds corn and cob meal, six pounds wheat bran, and two pounds new process linseed meal, and had discovered no evil effects from this ration. He feeds for milk of best quality. Mr. Higgins stated that the common objection to the new process meal is unsound. This contains all the valuable elements of the meal. There was less of the oil or carbon, but all the nitrogenous substance was retained; and as the price was less than the old process he recommended it.

The same subject was continued to be considered at the January meeting.

SILAS BETTS, Secretary pro tem.

Minutes of Meeting held Fourth Month 15th, 1887.

The Guernsey Breeders' Association met Fourth Month 15th, 1887, at 244 South Third Street, Philadelphia. The minutes of the preceding meeting were read and adopted, and James Logan Fisher was admitted a member of the Club.

Silas Betts read an interesting article by E. F. Bowditch, before the Massachusetts Agricultural College, in which he refers to the solidity of Guernsey butter, shape and general characteristics of the Guernsey cow.

Considerable interest was shown in the approaching dairy show in New York, and a number of members expressed their intention to exhibit.

Silas Betts stated that the subscriptions to the "Journal" were increasing, and it was hoped that they would be sufficient to guarantee a continuance of the publication of the paper.

Joseph Evans then discussed certain abstracts from the report of the New Jersey Experiment Station for the year 1883. He stated a number of rations for milk, viz: Thirty pounds brewers grains, three pounds wheat bran, twenty pounds fodder—as one day's ration. Another: Fifty pounds ensilage, three pounds bran, thirty pounds brewers grains, ten pounds timothy hay, four pounds corn meal, and three pounds oil-cake. Another; Twenty pounds brewers grains, fifty pounds green rye, three pounds bran, one pound cotton-seed meal. These rations apply rather to milk than to butter.

There was considerable discussion upon ensilage. Some members allow their corn to become glazed before cutting. It was richer, and more nutritious than if allowed to dry in the stock. The silos may be cheaply constructed buildings above ground.

It was the decided opinion of the Club, that cutting feed, both hay and fodder, was an advantage both for economy and in saving space in the barn, and that ensilage made a richer article of milk and butter. An invitation of Isaac W. Nicholson for the Club to meet at his home next month, was accepted.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fifth Month 19th, 1887.

The Guernsey Breeders' Association met Fifth Month 19th, 1887, at the home of Isaac W. Nicholson, near Haddonfield, N. J. The members of the Club were for the first time in the season treated to a country meeting, and the day throughout was much enjoyed. A view of our host's barns and stock was first in order. He keeps a milk dairy on an extensive scale, many of his heifers and young cows and some older ones are high grade Guernseys, or full bloods, making a very good product.

The minutes of the preceding meeting were read by the Secretary and adopted. The recent New York dairy show was discussed at length, it being the unanimous opinion that it was a grand exhibition, and calculated to do a great deal of good. After dinner we again convened and heard first, a paper prepared and read by John L. Balderston on Commodore Connor's herd of cattle.

I. W. Nicholson then opened the subject for discussion, which was: "Can Soiling be Made Profitable?" He thought he could keep twice as many cattle and have more milk in summer than if they were turned upon the best of pastures. Besides saving much more valuable manure which can be composted, allowing the nitrogenous constituents to ferment, and that more good will thus result both from nitrogen and ammonia than if otherwise treated. At the time of meeting he was feeding rye; after this, begins on clover, then timothy, then on soiling corn. He makes two feeds daily on the green ration. He likes clover hay, cut and mixed, brewers grains, and cotton-seed meal. This season he sowed alfalfa, some in drills, and some broadcast, and some in the rye. Later we will expect to report which plan is best. Alsike clover is better on low ground than high. He does not turn his cows out to pasture until after harvest.

Silas Betts keeps his cows in a twelve acre field until after harvest. In this he feeds them: first, rye, then oats and peas; he uses the black-eyed marrowfats (the Canada pea is too early and not tall enough). He sows two bushels of oats and two bushels of peas per acre.

William I. Tomlinson thinks well of wheat as a green feed, used after rye is too old. Henry Palmer thought we ought to have silos, and when our rye, oats, clover, corn, etc., are at their prime, and before they become too old, should place them in the pits and save them, and work on the ensilage crop until the next feed comes in succession.

R. H. Hodgson values clover highly for all animals, and said it should be sowed early in the spring to insure a good stand. He does not favor feeding corn until it has tassled and beginning to bear ears; then is there some substance in the crop. He also likes Hungarian grass cut just as the seed is beginning to harden.

John C. Higgins wanted to know more about intensive farming. Whether we can profitably keep fifty cows on fifty acres, turn two-thirds of our farm to the commons, and make as much on the remainder as we did on the whole. He said that in soiling we get all the manure, both solid and liquid, just where we can handle it to the best advantage. He thinks it more profitable and more healthy for the cattle, and that it can be accomplished on a quarter of the ground.

George Abbott found that too much ensilage impoverished the milk; he thought that corn cut too early and put in the silo made poor food, and Hungarian grass hay was by no means a rich food. Isaac Nicholson liked the corn to be in the silk before commencing to feed it. He favored plowing directly after harvest, and sowing grass seed by itself in preference to sowing in spring with the wheat; it was thus more liable to make a stand. Wheat produces better without the grass and grass better without the wheat. Though the subject was little more than fairly started, many of the members needed to leave in order to meet their trains.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eighth Month 31st, 1887.

A regular meeting of the Guernsey Breeders' Association was held at Locust Grove, the residence of Elwood Evans, near Marlton, N. J., on the 31st of Eighth Month, 1887. The President being absent owing to sickness, the Vice President took the chair; and the Secretary being unavoidably absent, John L. Balderston was appointed to take his place for the day.

The regular subject for discussion as announced was, "Dairy Help and its Compensation." The host has found it of decided advantage to employ married men and find them houses. He finds it best to place the responsibility of regular and routine work upon certain men, not dividing it by taking part of it upon his own shoul-

ders, the wisdom of which was announced years ago by the philosopher who framed the proverb, "Between two stools one falls to the ground." He pays his men, other than the foreman, one dollar per day and finds them a house.

Isaac W. Nicholson and Joseph Evans each gave in their experience, agreeing in the main, that it was best to give the charge of the cattle to one man, of the teams to another, and have all the help, except the teamster, assist the herdmen in milking. Isaac has found Irish help much better than German, at least where procured from the employment agencies in Philadelphia ; the Germans only appearing to desire a position on a farm until some friend in the city can find them a soft position there.

John C. Higgins finds that wages are higher now in comparison with the return received from produce than perhaps ever before.

George Abbott asked whether farmers do not now spend much more money than in old times, and whether foreigners who have taken up farms and are working them in a thrifty, close way, are not doing as well as our fathers. John C. Higgins said they were, no doubt. The most prosperous men are those who work the soil with their own hands. Here the Club adjourned to the dining room.

An examination of stock and machinery was next in order, and the fine herd of blooded cattle was much admired—Guernseys, Jerseys, and a few grades and unregistered animals, many of them notably fine specimens. New silos have just been completed, and the filling of them commenced. The silos are built in the large barn, taking parts of the hay bays ; the cutting being done by a Silver and Deming cutter, with twenty-four inch knives, driven with power carried by wire cable from a steam mill on the premises, situated perhaps twenty rods from the barn. A noticeable and valuable as well as novel feature, was an automatic arrangement for feeding the cutter by a carrier arranged in place of the table, which worked beautifully and perfectly. The cut material was carried to the top of the barn, by a system of elevators well and conveniently arranged.

JOHN L. BALDERSTON, Secretary pro tem.

Minutes of Meeting held Tenth Month 12th, 1887.

At a regular meeting of the Guernsey Breeders' Association, held Tenth Month 12th, 1887, at the residence of J. William Cox, Norway, Pa. The minutes of the previous meeting were read by the Secretary and adopted.

W. P. Hazard then read an appropriate tribute to the memory of our late editor, M. C. Weld. It was directed to be incorporated in the minutes: "Col. Mason C. Weld, a late member of this Association, and our successor as the editor of the 'Guernsey Breeders' Journal,' departed this life after a lingering illness from enemea. He had struggled for a year past against the weakening disease, striving to issue with regularity the 'Journal' he had undertaken at our solicitation, until in July he was obliged to suspend the publication, as he hoped for only a few months. His hopes were doomed to be disappointed, although only a few weeks before his decease, he issued a card saying that as he was now regaining his health, he expected to soon resume the publication. The next news of him was that he was no more, to our great loss.

"Col. Weld was of gentle birth on both sides, of sturdy New England stock for eight generations, and his ancestors were noted for their excellent religious and patriotic sentiments and actions. Born in Philadelphia, educated at Yale College, he afterward studied Agricultural Chemistry under Prof. Stillman, and in Germany under Liebig. After his return to his native land, he started the 'Homestead,' and afterwards was associated with the editorial staff of the 'American Agriculturist,' until his taking charge of our 'Guernsey Breeders' Journal.' His title of Colonel was honorably earned by his service in the war under General Banks, the other two sons of his mother having preceded him and died in the service.

"Of gentle manners, but firm in his convictions, his extended knowledge in his profession; terse in his writings, and imbued with the integrity of his ancestors, he was fitted to adorn any circle. Having visited the Channel Islands, he was one of the earliest advocates of the breed, and among the first to bring them into notice. This judgment he never relinquished, and was engaged in lauding them in his latest years. He possessed sound discrimination, which made him a good and reliable judge of this stock, and was often called upon to pass upon their merits, as well as upon Jerseys.

"I offer, Mr. President, the following resolution: This Association having learned of the decease of their fellow member, in the prime of life and in the midst of his usefulness, hereby direct the following resolution to he entered upon its minutes:

"RESOLVED, That this Association feels the deep loss which the death of Colonel Mason Cogswell Weld has brought upon it; and desires to express its high sense of his most worthy character, of his eminent abilities, and of his valued assistance to the cause in which it is engaged."

The following resolution was adopted relative to our late member, A. Wilhelm, of Harrisburg, Pa:

"Mr. President, we are called upon to feel the loss of another one of our members, in the death of A. Wilhelm, late President of the State Aricultural Society, and a valued member of this Association. Mr. Wilhelm was a self made man; a gentleman of kindly manners; a public spirited man whose generosity was often called upon; of excellent business tact, his advice was often asked. A lover of Guernseys, he sought in every way to advance their merit, and make them known.

"RESOLVED, That this Association enter upon their minutes their sense of the loss in the death of their fellow member, A. Wilhelm, and of their appreciation of his high character."

M. L. Greider, Mount Joy, Pa., was nominated and elected a member of the Association. A letter from James Cheesman, of Canada, was read sympathizing in the loss of M. C. Weld. The meeting received it kindly, and authorized the Secretary to answer it.

Extracts from other papers were read in regard to Guernseys, which were favorable to our interests.

The subject of continuing the "Journal" was brought before the meeting. S. C. Kent, W. P. Hazard, and W. B. Harvey were appointed to investigate the condition of the affairs of our late "Journal"—by corresponding with Secretary Norton—and endeavor, if possible, to make propositions as to how our interests may be represented in another paper.

The subject for discussion was now entered upon. J. William Cox opened the question: "What method shall be pursued in order to bring the Guernsey cow into more general use?" He thought for one thing, that we must put superior animals more continually before the public, and mentioned an instance where at a county fair there were plenty of Jerseys and Holsteins, and but one Guernsey cow, and she was black—not a good educator for the people, but she took the premium and would be by some taken as typical of the breed. More Guernseys are needed at the fairs. Breeders of other prominent kinds of cattle spare no efforts in bringing their herds before the people.

W. P. Hazard spoke of the lack of cattle at the fairs; that exhibitors are apt to be parties who want to get the premiums (huckstering them around for that purpose) more than to elevate the character of the breed. He mentioned the $100 prize of the A. J. C. C. to every prize herd at the State Fairs, and cited it as an instance worthy to be followed as an incentive for our breeders to bring out their cattle and bring their best.

William B. Harvey thought that in many instances, cattle (especially cows) were required to remain too long at the fairs; chilly nights, exposed to draughts, and in the day-time being constantly annoyed, lack of exercise, change of food, etc., work to the disadvantage of the cows, as they sometimes never recover from injuries received. It was suggested that we encourage managers of exhibitions to keep cows but a few days and inform the public to that effect. He thought the "Journal" was doing much good and wanted to see it continued.

S. C. Kent, who had but lately been on the Island of Guernsey, said he felt encouraged, on looking over animals there, they appear to be culled; plenty of poor stock, but a really choice cow demands fifty to sixty pounds, and prices are as low as fifteen to twenty pounds. He thought our "Journal" should be continued; that it had done a great deal of good, more than we were aware of.

Eusebius Townsend thought in many cases, bulls were not kept long enough to ascertain their real value. Oft times after they are dead, it is realized what an improvement they made on the herd. The bull is perhaps cross, and is killed when he is one of the best breeders.

R. H. Hodgson thought we must not kill the male because he is vicious; we want vigor and animation in the male; it will not do to kill a stud horse because he will kill a man, nor a bull because he will gore a person, but we must respect their warlike properties and be on our guard. He thought no cow could be found for the American farmer equal to the Guernsey—that she was worth just as little to-day as she would ever be. That we must not sell a bull for breeding unless he is from a good cow. We should perpetuate the good and discard the bad; show them to the public and educate people to appreciate their sterling qualities.

W. P. Hazard recommended local shows just for Guernseys; say one at West Grove, Pa.; another at Farmington, Ct.; and at other Guernsey centres, force our cattle on the people, but breed good cattle, and get them hungry for the best; we must be alive and awake to our interest.

John C. Higgins said we must keep good animals to be able to sell good stock at fair prices. Speaking of the beef qualities, he said he had recently killed a Guernsey cow that dressed five hundred and eighty pounds—the best he ever ate, and pronounced the very best by epicures. A number of members attested to the very superior quality and sweetness of Guernsey beef.

S. C. Kent said he learned from a very prominent breeder that he sent a large amount of Guernsey butter in small packages to Farmers' Clubs, Granges, etc.; that it had done much good for him.

R. H. Hodgson suggested that fairs offer special premiums for Guernsey butter, the prize to be a Guernsey bull furnished by a breeder of that stock.

After dinner, an examination was made of our host's herd of noble Guernsey cows and calves ; quite a while was spent commenting on the qualities of various animals, the young "Jeweller" bulls and heifers, etc.

The members were finally willing again to convene in the house for another session. Silas Betts was appointed a member ex-officio of the publication committee, also W. M. Paul.

The Treasurer announcing the lean condition of our finances, it was resolved that an assessment of one dollar be levied on each member. It was thought to be a desirable feature to be together longer and a suggestion was made that we hold our meetings where we could all dine and have a room near by, when we went into winter quarters, it would free us from a yearly rent and add a social feature to the occasion. George Abbott, Jr., was appointed to investigate the matfer and correspond with the Secretary.

Then adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eleventh Month 11th, 1887.

A regular meeting of the Guernsey Breeders' Association was held at Moores' Windsor Hotel, 1223-27 Filbert Street, Philadelphia, Eleventh Month 11th, 1887. The minutes of the previous meeting were read and adopted.

George Abbott, Jr., reported in regard to a place of meeting, that he had been to various places and this house gave the best

terms. The Girard House seemed to be next best, and in some r-e spects was preferable. He corresponded with the Secretary and the meeting was called.

Secretary Harvey then opened the Subject of a Guernsey publication on behalf of the investigation committee. He read a letter containing a proposition from W. D. Hoard, editor of "Hoards' Dairyman," Fort Atkinson, Wisconsin. The proposal was to establish a special department for Guernseys in his paper. After discussion the committee were released, and it was decided that the executive commitee of this organization be appointed to consult with the Executive Committee of the American Guernsey Cattle Club, New York, at the approaching annual meeting, with power to act in regard to the publication of a paper in the interest of the Guernsey breed.

The subject for discussion was : "What concerted action can be taken by the Guernsey and Jersey breeders for the general advancement of interest of Channel Island breeders?" George Abbott, Jr., was asked to open the discussion. He thought a club room could be rented in Philadelphia, and that it might advantageously be used as a rendezvous for Channel Island cattle breeders. Ezra Michener was opposed to the booming process; he thought there should be sympathy between Guernsey and Jersey breeders; but that concerted action was not desirable.

Henry Palmer has both breeds, and thinks that a good course, and considers that he is on the advance step in relation to the subject for discussion. Alexander Scott said he was a firm Guernsey man.

W. P. Hazard said that the men who had spent the most money in breeding Jerseys, are those who are backing out and selling their herds. He thought the circle for Channel Island cattle must be widened. Jerseys are considered by a great many to be the best dairy cow (i. e. for butter) and Guernsey men claimed much the same, though the increased weight of carcass and richness, is in favor of the latter. He thought a breeder of one kind would admit the good traits of the other, though the spirit of competition would prevent concerted action.

George Blight was much interested in all breeds of cattle, but after much investigation, he considers the Guernsey combines the most points as a dairy cow; that the Jersey was nice for rich cream and for the lawn, but for practical purposes the Guernsey will compete with all breeds. He thought he could not act in unison with Jersey breeders.

S. C. Kent thought we should take care of our own breed, and fight our common enemy the Friesians.

Elwood Evans had been breeding Jerseys, had now some Guernseys and in the future expects to breed more of the latter.

Benjamin Lippincott thought, if we desired concerted action it would look as though we wanted help from outside to keep us up, and that such assistance was not necessary or desirable.

John C. Higgins thought we must do our share to keep our cattle to the front, more especially that the Friesians are making such inroads. In his neighborhood are a number of creameries, and milk seems the thing to secure—quality is a secondary matter, and people are inclined by surface appearances to adopt the milk breed—while he thinks if they were shown the properties of both breeds in their true light, they would adopt cattle of richer quality. He thought we should go straight ahead and do all we could with our cattle.

Alexander Scott said that recently there had been trials at the Concord Creamery—Holsteins versus Guernseys and Jerseys. The former required twelve to fourteen quarts of milk for a pound of butter, while with the Channel Island cattle, seven quarts made one pound, and even better results had been made with them.

Henry Palmer noted a large Holstein breeder whose cows made one pound of butter to sixteen quarts of milk; also that Holsteins for the year, did not yield more milk than good Guernseys. Ezra Michener thought about fifteen pounds was the highest yield of legitimate butter a cow could make in a week by any legitimate method. A cow can be trained and can be made to yield much more, but of what use is it for a practical dairyman? In these yields of twenty-five and thirty or more pounds, a good portion is cheese and water, and as remarked by a fellow member, the butter could not be bought for five dollars a pound. Samuel C. Kent thought no cow living could make twenty-five pounds of legitimate butter by legitimate feed and care.

W. M. Paul said that where Guernseys were brought in open competition with Holsteins, the former would win every time, when they were shown in their true colors: and the duty of breeders was to exhibit, and in other ways keep them before the public.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Twelfth Month 9th, 1887.

The Guernsey Breeders' Association met Twelfth Month 9th, 1887, at E. C. Freeman's, Cornwall, Pa. The members came to Lebanon the night before; the following morning went to Cornwall, five miles distant, and were then driven to the farm of our host.

An inspection of the fine herd of registered Guernseys was first in order. A spacious, well lighted building, built especially for the cows, was arranged so that no hay or feed is kept there, only one story high, and with adjustable traps in the roof for ventilation. The bulls were kept in another barn near by. The pigs and crops were also inspected to the satisfaction of the visitors. Last, but not least, the dairy house was entered, the rich butter and cream admired, and the less stimulating skim milk partaken of.

The meeting was then held in a cheery room of the house occupied by Manager Samuel D. Hughes. Minutes of previous meeting read and adopted. Edward Coleman Freeman was nominated and unanimously elected a member of the Association. The "Journal" publication committee was not ready to report, and was continued.

The subject for discussion was taken up, "What is the Most Profitable Manner of Feeding and Managing the Guernsey, Longevity and Offspring Considered?"

Elwood Evans thought calves should not be forced; does not use cotton-seed meal; uses linseed instead. I. R. Scott thought calves ought to be fed to make flesh and bone, not too much fat, but to be made to grow fast. Mark Hughes thought it best to keep calves in good order all the time. Cows should go dry at least six weeks, and should not be kept in milk too long, especially in winter, when milk is worth most.

Samuel Kent thought we were liable to feed too high; that on the Island of Guernsey they fed lightly and had no diseases. He uses one-half cob meal and one-half bran, feeds four to six quarts twice a day, adding one-half pint of cotton-seed meal.

A. R. Scott said his trouble was in raising calves in winter time. William B. Harvey recommended taking them from the cow when from a few days to a week old. At first use mostly new milk, and gradually increase the skim milk, and commence in two weeks using a gruel of fine ground oats and wheat, and a little oil cake is good.

Benjamin Hoopes thought the trouble in raising calves was that we kept the cows too confined in winter; give them more exercise.

They will digest more food and be healthier. If milk is what you want, keep them in the stable quiet, and feed all you can. When he first started, he bought high grades at high prices, fed high and had good results. He found, however, that they would not breed right, and lost more in this way than he gained in increased yield. He thought Guernsey skim milk was poorer than skim milk from common cows.

Samuel D. Hughes fed five quarts two times a day, one-half bran and one-half corn meal; young stock one-half corn and one-half oats. In eighteen cows milking one hundred and seventy quarts per day, he uses no grain within three weeks of calving, nor strong feed directly afterward; takes calves off when three or four days old and feeds one-half skim milk until three or four weeks old, then changes to all skim milk. S. C. Kent and J. C. Higgins thought Guernsey skim milk quite rich. S. C. Kent had been sending his to George Abbott, Jr., who reported it eleven per cent. solids. I. R. Scott said that at the Concord Creamery they had to put in water to get all the cream out of the Guernsey milk.

Henry Parmer said that Thomas Sharpless, who then used the large Jewett pans, had not enough milk to properly fill them; he added water and had as good results and as much cream in proportion as though the added material had been new milk, he even found the yield was fifty per cent. gain.

Benjamin Hoopes keeps his cows in open yard except when milking, and considers this a good plan, as it keeps them healthy.

Elwood Evans keeps twenty-four cows, milking twelve through the year; proceeds, $2,300. Other instances were given.

Subject for discussion at next meeting, "Gross Proceeds from Milk and Butter Dairies."

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 30th, 1888.

The annual meeting of the Guernsey Breeders' Association was held at Moores' Windsor House, Philadelphia, First Month 30th, 1888. At the request of the President, the Vice President took the chair. The Secretary being absent, on motion, John L. Balderston served in his place. On motion, the election of officers was postponed for half an hour awaiting the arrival of some not yet present.

The matter of the publication of a journal being called up, Ezra Michener reported that W. D. Hoard, editor of "Hoard's Dairyman," had offered to devote some columns regularly to the Guernsey interest, asking no compensation excepting the support of the members at regular rates. The Guernsey Cattle Club had accepted the offer, which was also satisfactory to this Association. A resolution was passed instructing the Secretary to furnish the editor with a list of all our members, and to forward from time to time all matter suitable for publication, which may be sent or handed to him.

Silas Betts called the attention of the meeting to the superior value of the Guernsey bull for crossing native or other cattle for dairy purposes. Our dairymen demand a calf which will be valuable either to raise or for the butcher, and it is beyond question that these can be most surely obtained by the use of Guernsey bulls.

J. C. Higgins suggested that breeders should place their surplus bull calves at low rates among their neighbors, where they may advertise their value as a means of improving native stock. Robert Hodgson had practiced this plan to a considerable extent, always reserving the right to buy them back at a satisfactory price, if they may be wanted to fill a demand for registered stock. Ezra Michener had done considerable missionary work by keeping two bulls and allowing their use by neighbors at nominal rates.

The annual election of officers for the coming year was then made, those elected being:—President, John C. Higgins, of Delaware City, Del.; First Vice President, Isaac Nicholson, Haddonfield, N. J.; Second Vice President, John L. Balderston, Kennett Square, Pa.; Secretary and Treasurer, William B. Harvey, West Grove, Pa.; Executive Committee, Silas Betts, Camden, N. J.; Ezra Michener, Carversville, Bucks County, Pa.; William M. Paul, Moorestown, New Jersey.

The subject of the best method for enabling farmers to sell their milk at its proper value as determined by the actual amount of butter contained in it was brought up. The cream gathering system, which promised well, apparently, proves defective because cream is not of uniform value from different cows, and under different conditions. The centrifugal separators appear to be necessary to take all the butter from milk, and in the counties surrounding Philadelphia, seems to be rapidly supplanting all means of raising cream for butter.

George Abbott, Jr., called attention to a fact, brought out by many analyses which he had made, that the skimmed milk from

Channel Island cattle shows a larger per cent. of solids than that from any other cattle, a result which was a surprise to himself and contrary to the common theory; the average of a number of samples being about 10.50 per cent., while ordinary milk only gave about 9.25 per cent. The unskimmed Channel Island milk is also uniformly of greater specific gravity than other milk, the excess of fats being more than counterbalanced by the excess of other solids. It was resolved that George Abbott be invited to prepare an article for publication, showing the relative value of the skim milk from Channel Island as compared with that of other cattle, as shown by scientific research.

After dinner, the Association came to order to discuss the subject of the day, "The Gross Proceeds of the Dairy." Several members gave carefully arranged and tabulated figures, showing results for several years, and all approximating one hundred dollars for each cow on the place.

JOHN L. BALDERSTON, Secretary pro tem.

Minutes of Meeting held Third Month 9th, 1888.

The Guernsey Breeders' Association met Third Month 9th, 1888, at 244 South Third Street, Philadelphia, with an unusually large attendance of members, and several visitors, among whom, as an invited guest, was Prof. C. B. Cochran, State Food Inspector. The minutes of the previous meeting being disposed of, the irregularity of butter production was brought up. Alexander Scott said that from the middle of Third Month to middle of Fourth Month, cows always fall off; also from middle of Tenth Month to middle of Eleventh Month; it was attributed, in the spring particularly, to change of coat.

Ezra Michener showed a sample of Guernsey butter of a rich yellow color; it contained no artificial dye stuff, it was from a young cow, "Haddie Woodward," 635 A. G. C. C. She made ten and three-quarter pounds in Ninth Month in 1887, when fresh, and seven and three-quarter pounds a short time ago, and makes just about that amount until due to be fresh again. She will make a pound of butter every day in the year and drop a calf besides. His feed is six quarts bran and three quarts corn meal, one quart

oil cake meal, fodder twice a day, and clover once a day. The sample of butter was a week old, and had some salt on the outside.

Prof. Cochran explained the appearance of salt as comparable to the saltpetre mines in tropical regions, the nitre was drawn to the surface of the ground to the air by capillary attraction, and thus easily secured in the shape of scales.

E. J. Bonbrake, Chambersburg, Pa., and Prof. C. B. Cochran, of West Chester, Pa., were both unanimously elected members of the Association.

John L. Balderston reported the Kent-Hoopes Guernsey sale on the previous day, at the residence of Benjamin Hoopes (the latter expecting to rent his farm). The sale was a very good one and prices encouraging; bidding was animated; twenty-one head realized $2,750; a good proportion were young animals. This herd has averaged over six pounds per week per cow for the whole year; they were not stabled any except to milk.

The specific gravity of various kinds of milk was discussed. George Abbott, Jr., stated that the specific gravity of Channel Island milk was greater than other breeds, and referred to experiments by Prof. Aylesbury, who took 14,255 samples, in which, taking water as the average, was 1,0323. These samples were taken every day in the year, and are probably the most accurate of any that are attainable. Dr. Beith gives the specific gravity of Channel Island milk as 1,0341035, .002 per cent. more. Ezra Michener weighed a can of skim milk, making it thirty-nine and three-quarter pounds, the same can filled to the same place with whole milk weighed just the same, with his scales, which weighed one-quarter pound. Prof. Cochran said after calculation, that the skim milk really was one-fifth pound heavier than the whole. The specific gravity of butter fat runs from 913 to 914, counting water as 1,000. If milk is 1,034, skim milk will be 1,039, the fat being taken out, which is the lightest. The fat in Guernsey skim milk has been found greater than in any other, from one to one-fifth per cent; Friesian, one-fourth to one-half per cent. The percentage of solids, not fat, is greater in skim milk than in whole milk.

George Abbott, Jr., then read a very instructive article on the relative value of Channel Island skim milk as compared with that from other breeds, as follows: "With all the laurels the Channel Island cattle have so long and deservedly worn as the champions of the world in the production of milk rich in cream and butter fat, they have had to bear the popular reproach of producing milk supposed to be peculiarly poor in quality after the extraction of the cream.

"How such an impression gained currency may be difficult to explain. I can but admit how I shared in the common belief and am now surprised at the slowness with which my perception became cleared in the matter. Some of us have no doubt scanned the very data that I shall present to you to-day, drawn as it is from publications that have been before the public for from one to seven years, yet have not recognized therein the vindication of the Channel Island cattle from this unfair imputation. It appears to be a fact that the milk of the Guernsey and of the Jersey, while excelling all others in solids fat, also excel all in solids not fat, and analyses indicate the skim milk of the Channel Island cattle to be superior to that of any other breed.

"There has been comparatively little publication of the relative character of the milk of different breeds as shown by complete analyses. All the data that I have been able to obtain however, points to but one conclusion, and I think pretty well establishes the superiority of the Channel Island skim milk. Analyses of the skim milk of different breeds being comparatively rare, I shall also present some results showing the solids not fat and the casein in whole milk of various breeds, as nearly indicating the value of the skim milk of said breeds.

"The average total solids found in separator skim milk may be placed at 9.75 per cent., and the fat in the same at .5 per cent. In those systems of skimming that give a less perfect separation of the cream, a large per cent. of fat will remain, amounting to .75 to 1 per cent., and when disturbing causes exist occasioning imperfect separation, a still greater per centum of fat will be found.

"Prof. C. B. Cochran, in the Pennsylvania State Board of Agriculture Report for 1885, gives the following results of analyses of skim milk from cows of different breeds: Solids not fat, one Guernsey cow, 12.59 per cent.; one Guernsey cow, 11.45 per cent.; one Guernsey cow, 10.93 per cent.; one Jersey cow, 10.97 per cent.; one Friesian cow, 9.94 per cent.; one herd Friesians, 9.51 per cent.; one herd Friesians, 8.95 per cent.; one herd Friesians, 10.26 per cent.; one grade Jersey cow, 10.25 per cent. Prof Henry Trimble found the solids not fat in the skim milk of a herd of high grade Jerseys to be 10.07 per cent; also solids not fat in Jersey skim milk on sale in Philadelphia, 10.98 per cent.; solids fat in same sample, 1.63 per cent.; and also separator skim (Jersey or grade) solids not fat, 10.50 per cent.; solids fat, .63 per cent.

"New Jersey Experiment Station in analysis of skim milk of a Jersey herd obtained solids not fat, 10.9 per cent. The solids not

fat in whole milk (not by the Adams process) average about 9.25 per cent.

"Prof. Cochran, in report above alluded to, gives a table showing the average composition of milk of different breeds, from which the following is extracted: Solids not fat Devon milk 8.8 per cent.; Friesian, 9.28 per cent.; Guernsey, 9.63 per cent.; Jersey, 9.51 per cent. Also analyses of individual milk of three Jersey cows, average solids not fat, 10.34.

"Dr. E. H. Jenkins, in Connecticut Experiment Station, report for 1883, gives a statement from which the following showings for the solids not fat are taken: Six Guernsey cows, the property of Edward Norton, Secretary of the American Guernsey Cattle Club, 9.75 per cent; five Ayrshire cows, 8.52 per cent.; six native cows, 8.08 per cent. Same authority in Connecticut Experiment Station report for 1886 gives results as follows: Solids not fat in milk of three registered Holsteins, 8.67 per cent.; four full-blooded but unregistered Ayrshires, 9.41 per cent.; ten Ayrshires, 8.64 per cent.

"Concurrent with the belief that the skim milk of the Guernsey and the Jersey cow is poor in quality, is a popular impression that the milk of the Holstein is peculiarly rich in casein, from which they have been considered preeminent as cheese makers. Let us see if the milk of the Channel Island cattle is not much richer in casein than that of the Holstein cattle. From the analysis already quoted we have results for casein as follows: Prof. Cochran, Holstein herd milk, 4.12 per cent.; average for five Guernsey cows, 4.73 per cent.; average for three Jersey cows, 5.35 per cent.; Devon herd milk, 3.66 per cent.

"New Jersey Experiment Station average, three herds Jersey cows, 3.72 per cent.; five Ayrshire cows, 3.20 per cent.; six native, 3.34 per cent. Connecticut Experiment Station report, six Guernsey cows, 4.08 per cent.; four full-blood but unregistered Ayrshires, 2.77 per cent.; three registered Holstein cows, 3.25 per cent. A compilation of the above results gives the following:

	Per cent. of solids, not fat, in skimmed milk.	Per cent. of solids, not fat, in whole milk.	Per cent. of casein in whole milk.
Guernsey,	11.66	9.69	4.41
Jersey,	10.84	9.93	4.54
Jersey (grade),	10.16		
Holstein,	9.67	8.98	3.69
Ayrshire,		8.86	3.49
Devon,		8.08	3.66
Native,		9.08	3.34

"Prof. Henry E. Alvord has found solids not fat and casein, as follows:

Average Milk.	Solids not fat	Casein.
All breeds,	9.03 per cent.	3.41 per cent.
Holsteins,	8.78 per cent.	3.15 per cent.
Jerseys,	9.76 per cent.	3.98 per cent.

"I may add a few remarks relative to the other question before us to-day, viz: 'The relative weights of whole milk of different breeds.' There is, I believe, a popular impression that the milk of Channel Island cattle is, because of its superior richness, of less weight, bulk for bulk, than the milk of other or general breeds, and that in consequence, the producer of Guernsey and of Jersey milk is placed at some disadvantage in selling the same by weight. There seems no foundation for this impression; the milk of the Channel Island breeds is known to be of greater specific gravity, and consequently heavier than the other breeds; the difference is however so slight as to be not worthy of consideration from a commercial point of view.

"The specific gravity of general milk may be stated at about 1.032 per cent., while the product of the Guernsey and Jersey cow is about 1.034 to 1.035 per cent.—a difference in favor of the latter of at least .002 of one per cent. It would seem that while the increase in the solids fat, in the milk of the Channel Island cattle doubtless tends to depress its specific gravity, the accompanying increase in the solids not fat as set forth in the early part of this paper, more than compensates for this depression by the fat, resulting upon the whole in a greater specific gravity. The milk of the Guernsey and the Jersey cow is therefore again acquitted, in facts it seems invulnerable at all points.

"It is much to be hoped that analytical research will be increasingly directed to the determination of the constituency of the milk of different breeds of cattle, whereby the relative character and value of the same may be absolutely determined.

"Awaiting further investigation, we may, I think, with reasonable assurance, claim the superiority of the milk of the Channel Island cattle for all purposes."

Thomas Sharpless wanted to know what per cent. of cream on graduated per cent. glasses he ought to get. George Abbott, Jr., said from 12.5 to 16 per cent. Prof. Cochran put common production at ten per cent; Guernsey, twenty to thirty per cent. This test was not recommended as a gauge in a butter dairy.

I. W. Nicholson thought that the amount of cream varied with

time of lactation, that a cow which gave twenty per cent. of cream when fresh, would make thirty-three per cent. when six months gone in calf. If a cow is worried by dogs and milked but once a day, the cream is richer. Prof. Cochran said that the very yellowest milk is not always the richest in fats.

It was voted that a copy of George Abbott's article be furnished the Secretary to place with the proceedings of the meeting, and be sent to "Hoard's Dairyman" and that a copy of the essay be sent to the "Country Gentleman."

Prof. Cochran thought that milk from cows that give a large percentage of fat makes better butter than those giving less, which would have fewer and smaller cream globules, and in which the curd was more prevalent. Prof. C. had seen butter with forty-seven per cent. of water. Good butter contains ninety per cent. of fat and six to seven per cent. of water; so we see that in water and curd can be accounted some of the great butter yields reported, and not the proportion of fat that should be in good butter.

I. J. Clapp, of Wisconsin, who has had large experience with Guernseys, said that in three months from the time he first saw an animal of the breed, he had a herd; there has been a steady demand for the stock ever since he commenced. In years back he bought Jerseys; they were not popular with his neighbor farmers, but the Guernseys are taken with avidity. He thinks the time will soon be here when his State will make a better showing in dairy interests than any State in the Union.

Adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fifth Month 31st, 1888.

The Guernsey Breeders' Association met Fifth Month 31st, 1888, at the "Old Brick" residence of S. P. Taber Willets, Roslyn, Long Island. Though the day was wet, nearly fifty persons assembled to enjoy the privilege of inspecting the Guernseys, their commodious quarters, the dairy, and attend the regular meeting of our Association.

After partaking of lunch to satisfy the inner man, the dairy was visited. This is a new structure built very substantially of brick. We were then taken to the new octagonal barn, filled with

grown animals, heifers and calves. Numerous choice animals were before us, though the second barn visited showed even more superior animals, those which could not help fill us with admiration; their daily records hanging near by was a further testimony to their utility.

We then convened for the meeting, Dr. J. N. Borland being chosen Chairman for the day. L. V. N. Blackman read an able article on "Personal Management of Barns, Cows, and Dairy." Having mentioned silo, the questions came as soon as through, as to its success, and a very lively discussion ensued. His silo was ten by eighteen by twenty. A bushel basket of ensilage was fed each day per cow, in three feeds, smallest being at noon. The food as it comes from the pit is quite dry, and it is sprinkled with water, and meal then added. The corn is cut when ears have commenced to be glazed, cut in one-half inch lengths. It was well tramped as put in and no weight was needed. By letting the corn ripen, much less acid was developed. He found starch in the corn when taken from the pit. Some years ago, when he cut the corn green, his ensilage was so sour it would pucker the mouth when tasted. He thought a cow giving 3,000 quarts of milk per year was not good enough to keep. He was getting 20 per cent. cream from his herd.

The question was asked why the Condensed Milk Association, of New York, ruled out milk from silo-fed cows. It was answered by more than one: That years ago when the strongly acid ensilage was fed the milk did not keep; it was fed in too large quantities; that there is no such trouble now, but the Association did not see fit to reconsider their former order.

S. L. Hoxie said that the Unandilla Association had been condensing ensilage milk with very good success.

S. M. Jones said too much of the best ensilage would impart a taste to the butter, and thought on this account it was better to feed after milking.

Elwood Evans uses ensilage largely, has two pits ten by twenty by thirty-three feet. He filled each three feet per day, keeping them level but not tramping, using no weights on top. The great depth caused sufficient settling. He could not in this method get the temperature above 115 degrees; thought if he had left his pits two days they would have risen to 125 degrees. He intends putting dry cut straw or hay on top. He wants the corn to be in milk when he cuts; if left longer the last cut will be too old, and the corn is not apt to be so well digested. Put the corn in as soon as cut, do not let it wilt.

S. L. Hoxie advocated planks laid on top of silo, but no heavy weights.

Elwood Evans's milk now shows 14.42 per cent. solids, still uses some ensilage; before he fed it he had 13 per cent. solids. He wants to maintain his reputation by the present method.

Edward Norton read a paper full of practical sense on "What shall be done with the Poor Cow."

Silas Betts thought the high tests from individual cows by high feeding, a great skill, had fallen short of the mark intended; certain families had been improperly boomed, much money had been spent in buying them, the offspring not nearly always what was expected; he approved of the conservative action of the Club in making tests. He thought it was hard to gauge the value of an animal, that it was best to sell the progeny only; if a man owns a poor cow kill her himself, not palm her off on an unsuspecting buyer or even a speculator who knows what she is. His faith in Guernseys was never stronger than to-day; he thought they were improving faster now than ever before.

Ezra Michener showed two samples of butter, one of his own make from his Guernsey herd, another, a seventy-five cent per pound article he had procured in New York City. His own stood up very well while the other was soft and greasy. He thought if a person could not make finer butter from Guernseys than the last sample, he had better change his system of dairying or get another dairyman.

Our time was limited and we had to leave soon after we were fully interested in the discussion. No arrangements were made for next meeting. Due notice will be given by the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Seveth Month 27th, 1888.

The Guernsey Breeders' Association met at the home of S. C. Kent Seventh Month 27th, 1888, there being a very general attendance. After the reading of the minutes of last meeting, and as preliminary business, the discussion of the ensilage topic was taken up. E. Evans who has large and successful silos, was asked how soon his ensilage was fit to use, he thought the feed could be used from them in a week if needed, though in practice, he did not open them for a month or six weeks.

Silas Betts referred to some silos in England, which were constructed more like hay stacks than our silos; a solid square base was made and boarded up a short distance, and the green material then stacked; chains being put on top, and weights to hold them down.

Elwood Evans thought it was important not to cut the corn too old; that if glazed, the corn would come through the cow undigested; he had seen ensilage where the droppings showed whole corn. About two acres of his corn last fall became glazed before it was gotten in, he had to husk it and cut the fodder. It was his worst ensilage and there were mouldy spots through it; the air did not seem to get out.

He did not feed corn meal in winter, used bran mainly, sold eighteen hundred bushels of corn and forty tons of hay, which would have been mostly, if not all fed, if he had not the silo. He thinks it very important that all meal should be mixed with rough feed to cause it to be remasticated; at this time of year he feeds corn meal and bran and mixes it with cut hay.

William I. Tomlinson, in speaking of fatting steers, said it was necessary to feed an excess of meal to make the cattle lay on fat fast, a considerable quantity of feed must be wasted.

The Secretary read a letter from James Cheesman relative to publishing a Guernsey journal; as we had made arrangements with "Hoard's Dairyman" to publish such matter as we wished to put before the public, the Secretary was requested to decline the offer. More articles on Guernsey matters are wanted.

It was decided to hold the next meeting at the home of John L. Balderston, near Kennett Square, Pa. Subject for discussion and day of meeting not announced.

It was asked how Hungarian grass compared with timothy hay. Samuel Kent said that the former was a valuable feed to him—superior to timothy. John L. Balderston was highly gratified with results from it, both as summer pasture and winter feed. At his father's home, cows and calves were made fat on it without meal. Calves were put into quarters in the fall in poor condition, and improved right along. He lets it wilt a little after cutting, then heaps it up and finishes the curing in the cock, the broad leaves turning water almost like shingles. I. W. Nicholson wintered Philadelphia horses on it successfully; had four large four-horse loads on half an acre, though he had succeeded in getting but one full crop. It is dependent much on the weather. Mark Hughes prefers good clover hay to Hungarian, though he has been success-

ful with the latter; he attributes its good qualities to the seeds, which are rich in food and very numerous.

The regular subject for discussion was then taken up, viz: "Warming water for dairy stock; best and most economical plan. Heating for milk versus butter, etc." The Secretary read a letter from I. J. Clapp to our host, speaking of the plan in very favorable terms.

Howard Preston, Oxford, Pa., had been heating water with marked success; he started at sixty degrees, but better results were attained at a temperature of seventy-five to ninety degrees. He thinks his milk as good as before he commenced heating, and the quantity was considerably greater. He is satisfied that it takes less food when warm water is used than with cold. Elwood Evans has been heating water, but is not satisfied with his present plan; is now looking the matter up.

Joseph Pyle noticed that cows went away from fresh spring water, and drank from an old brick pond in which the water was very much warmer, this being in summer time. Plans for heating were mentioned, but not enough of them. Henry Palmer favors having iron troughs in the barn-yard and putting coal-oil stoves under them, properly arranged to give draft, and safe against danger. Another plan was by putting an oil stove in the trough, having flues for air, etc. It was suggested that manufacturers would make such appliances when breeders demand them. Circulating boilers were talked about, and the matter generally agitated, and our members, at least a portion of them, are going to heat water the coming winter.

After dinner, and a nooning on the spacious porch, we went first, to see the bulls, then the calves, and finally the fine herd of registered cows, in the stable. After various favorable comments on the animals, it being decided to have no afternoon meeting, the whole company walked to William B. Harvey's farm, adjoining that of our host, and made a brief inspection of his dairy house, barn, and the milking portion of his Guernsey herd, the bulls, calves and the piggery, etc.; but as this is not a Harvey meeting, we will again return to our host's home, and, after chatting a little, take carriages for the station, having spent the day with profit and pleasure.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eighth Month 22nd, 1888.

The Guernsey Breeders' Association was held Eighth Month 22nd, 1888, at the home of John L. Balderston, near Kennett Square, Pa. The weather had been unfavorable; numerous members from a distance were absent.

John L. Balderston addressed the meeting on the origin of the creamery system. Lloyd Balderston thought the two dash churn superior to other makes. He thought separator cream was double in quality to that taken in other ways. S. Morris Jones said it was or could be made to be the richest cream of any. When during his early experience in a creamery using deep cans, he thought when ten quarts of milks made a pound of butter it was a very good result; average was eleven and twelve. Now with separator, if it requires much over nine quarts, he looks out for watered milk. With Channel Island cows less than six quarts of milk, he finds, make a pound of butter.

John C. Higgins asked whether ice cream makers had any reason to complain about separator cream not being as good as that set by Cooley or other methods. Elwood Balderston, who had had experience, said it would not swell as much as cold setting cream, and that unless it was carefully handled, the article of ice cream was not as good. S. Morris Jones thought the Danish Weston separator was not suited for making cream for ice cream purposes—too much froth.

There was quite a talk on animal odors, and the smothered taste in milk. It seemed to be the general opinion that after the separator, the Cooley submerged method is the best, the animal odors being absorbed by the water, which, by the way, must be frequently changed. George Abbott, Jr., said the nearer thoroughbred his dairies were, the better the quality of milk. Sometimes thoroughbred milk has to be classed as "B," owing to poor quality.

Dinner being announced, the meeting adjourned, and after our repast enjoyed looking at the fine herd of unregistered Guernseys, which showed good size, and constitution, and by their udders told their own stories of good yields. His silo was inspected with interest, and also the capacious barn, constructed without the troublesome cross-ties in middle.

An afternoon session was held, in which George Blight said that the Agricultural Society had given up the room at 244 South Third Street, Philadelphia, and transferred the library to a place in

the University of Pennsylvania. It was decided to try the Girard House for winter meetings.

Adjourned to the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Tenth Month 26th, 1888.

The Guernsey Breeders' Association met Tenth Month 26th, 1888, at the Girard House, Ninth and Chestnut Streets, Philadelphia. This was our first city meeting this fall, and was well attended by those who are generally with us. The minutes of the previous meeting were read and adopted. The Secretary read a letter aderessed to him from Prof. Collier, of the New York Experiment Station, stating that the Holstein and Jersey Cattle Clubs have agreed to present to the station calves to be reared there and experiments made there at different periods of growth and at maturity; he desires to secure good representatives of the Guernsey breed to be reared side by side with the Holstein and Jerseys. In this manner, by unprejudiced and careful tests, the cows when mature will give important information to the dairy world.

William M. Paul and Isaac Nicholson had received letters from Prof. Cook, of the New Jersey Experiment Station, asking for mature cows to be kept two years at the station and tested. The Secretary was authorized to write to both Prof. Collier and Prof. Cook, stating that the matter has received our consideration, and will be brought before the annual meeting of the American Guernsey Cattle Club this winter.

William J. Thompson Philadelphia, and Harry E. Moore, West Grove, Pa., were nominated members of the Association. The rules were suspended and they were unanimously elected members.

The Secretary called attention to the fact that we needed more of the members to take an active part in the proceedings, and more to attend the meetings. We should make them so interesting that they could not help meeting with us. Silas Betts thought we ought to have papers read and have general interest maintained. He offered the following resolution which was unanimously adopted, viz: that all members agree to prepare, if at all possible, a paper on dairy interests, to be read during the winter of 1888 and 1889. George Blight and Elwood Evans volunteered to read papers at our next meeting.

J. C. Higgins read an article quoting from a paper by Henry Stewart in the "Country Gentleman," in which is stated: "After having investigated it (bloody milk) and experimented with it carefully, I came to the conclusion that it was a constitutional defect, and depending upon defective milk secretion. This made it necessary to investigate it physiologically to find the cause of it. No doubt it may be produced occasionally by injury, but in such case the bloody appearance of the milk is wholly different from that of the usual and unexplained trouble.

"When a cow is injured by blows or violence of any kind, the milk is streaked and mixed with actual blood which differs very much from the usual red blood which is not apparent, or scarcely so until it separates from the milk at the bottom of the pan; so that between the accidental and the constitutional cause it is easy to distinguish. The red fluid in the latter case is not blood; that is, under the microscope it presents quite a different appearance; and the strings of red blood globules which appear in blood are not seen. Moreover it will not form a clot, and fibrine cannot be produced from it. It is in fact milk in its transition stage from blood, incompleted and secreted before it is wholly changed. It contains albumen and no casein, but the fatty globules of the sugar exist in it in about the same proportion as in milk; and just here comes in a pertinent fact well known to physiologists, viz: That potash is perfectly indispensible to the formation of milk from the blood, because it is the agent by which the albumen of the blood is converted into the casein of the milk in the body of the cow. [Playfair].

"This is a most important thing for dairymen to know, because it is a key to the right system of feeding for milk product, and will enable them to choose such foods as are rich in potash as the best means of increasing the yield of milk and for avoiding this very prevalent trouble we are here discussing. For if a cow is fed with food rich in nitrogen, by which blood rich in albumen is produced, and there is a deficiency in the indispensible potash, it is quite reasonable to expect this very result, viz: a partly formed milk, or milk in which the elements of blood exist to excess; and these elements may carry with them the red coloring matter of the blood along with the excess of albumen; or the albumen alone may be excessive in the milk, and this will give rise to many difficulties in the dairy which occur from this unexpected cause.

"It would occupy too much space if I were to mention a small part only of the tests I have made in this direction as well as in

others in regard to the effects of feeding upon the milk of cows. But one in particular will perhaps be interesting. It was the case of a pure bred Ayrshire heifer with her first calf. I was then feeding cotton seed meal and malt sprouts, the most highly nitrogenized food we can use. This heifer's calf refused the milk which seemed to be good at the first milking. None of my calves ever sucked, but all have been taught to drink from the first. The milk was set aside and in a short time separated into two layers, one the rich yellow colostrum and the other a red fluid like blood and about half of each. The heifer's milk remained so for several weeks, during which I waited patiently for a change. I then changed her food, giving malt sprouts, (containing 2 per cent. of potash) linseed cake meal (1¼ per cent. potash) and rye bran (2 per cent. potash) and no cotton seed meal. The milk gradually improved until it could be set for cream. I then gave one ounce doses of carbonate of potash (the common saleratus) choosing this rather than the commonly used saltpetre (nitrate of potash) and in two weeks the red coloring matter wholly disappeared. Saltpetre in one ounce doses has long been a common remedy among dairymen for this trouble; but it invariably acts upon the kidneys too much and so reacts unfavorably upon the milk production. I think if your correspondent and others who so often complain of this trouble will follow out this plan, and will guard against giving cotton seed meal but use more linseed and rye bran they will be greatly relieved of this trouble. One more point should not be missed, which is that there are several weeds frequently found in pastures, which seem to cause this trouble and others than these, as indeed all weeds should be exterminated."

After thus reading from Stewart's article, J. C. Higgins commented as follows: "Mr. Stewart is regarded as one of our most practical and intelligent writers. The article I have quoted would be creditable to anyone. The farmer who can cope with a disease by going into the physiology of the cow and demonstrating its cause and cure may well be accepted as a good authority.

"The disease that causes bloody milk is here traced to a lack of a mineral constituent of food, potash. Books upon feeding animals contain rules and rations, but none that I have read have anything about the necessity of looking farther than carbohydrates, albuminoids and fats.

"Mr. Stewart asserts that the physiological statement from Playfair 'is the key to the right system of feeding for milk product.' He also asserts that the trouble of defective milk secre-

tion is very prevalent. I think there is no question about this and if Mr. Playfair is right, the wonder is that more trouble has not resulted from a failure to understand the relations that potash and albumen bear to each other in the production of milk. Cotton seed meal always comes in for the most blame when a cow, being fed on it, is found with one or more of the forms of milk and udder trouble. While rich in potash (2.18 per cent.) its albuminoids (33 per cent.) are disproportionately large.

"Compare it with wheat bran, 10 per cent. albuminoids to 1.33 per cent. potash. To have equal proportion cotton-seed meal would show 4.43 per cent. potash. Thus cotton-seed in this most important factor, lacks proportion and is not a well balanced food. Manifestly the course is to add an ingredient that is rich in potash, and thus supply the need that nature exhibits. By keeping this in view, our foods richest in albuminoids, it would seem, can not only be fed safely, but more profitably.

"More knowledge of the physiological processes of which this is a type, viz: the turning of the albumen of the blood into the casein of the milk by means of potash, would be very useful to those engaged in animal industry. It would make an interesting subject for experiment stations as well as for the practical dairyman, to see how far potash and albuminoids complement each other in alimentation and milk production."

John L. Balderston has been troubled with a peculiar form of garget, cows feverish in one or more quarter of udder, or a yellowish curd, stringy and wheyey, passed the milk. Sometimes the udder became inflamed and in a few days went away; in others, the udder filled hard like curd, could not get a drop of milk and she dried up.

I. W. Nicholson said that garget fever gave him most trouble. He uses nitrate of potash in one ounce doses three times a day on first symptoms, if left to go on, the quarter will dry up. He thinks that all who feed nitrogenous foods have this trouble; more potash is needed.

William M. Paul thought garget could in a great measure be controlled by judicious feeding, especially before and after calving. He uses bran and a little oil meal before calving, and only bran after calving for a while. By feeding high at this time, garget is most apt to recur. Silas Betts regards garget as constitutional; also that much depends on the milkers.

We did not feel nearly through with the subject, but having

arranged a dinner hour, and it arriving, we had to adjourn, hoping again to discuss the garget question more thoroughly.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eleventh Month 29th, 1888.

The Guernsey Breeders' Association met Eleventh Month 29th, 1888, at Girard House, Philadelphia. The minutes of the preceding meeting were adopted. It was decided to hold the meetings hereafter the last Sixth-day (Friday) of every month during city sessions, except the annual meeting.

Silas Betts, of New Jersey, and Henry Marshall, of Pennsylvania, were appointed by the President to prepare essays for next meeting.

George Blight read a paper reviewing Stewart's Dairyman's Manual, which elicited some discussion. The properties of a family cow were considered. George Abbott, Jr., said that the people wanted very rich cream, and he wanted it for his own use, and for this cause together with others, he preferred Guernseys. Silas Betts said that the Jerseys gave the richest milk of any breed of cattle except the Guernseys.

George Abbott, Jr., named one of his patrons who had a herd of imported and registered cows, also some grades, and by actual weight, the former gave more pounds of milk per year than the grades.

Elwood Evans read a paper (quite extensive) on the food subject for dairy cows. He landed on the silo question, and gave interesting data in reference thereto. It was asked what was to be done when a wet spell came on in the midst of silo filling. Joseph Evans filled his silo for the first time this fall, and it happened right in a wet spell. Three or four days elapsed without any fresh addition of corn, and nothing suffered. He used wheat chaff to cover the silo when filled, putting it on almost one foot thick. On opening, there was very little waste. It is light to handle, and there is no use in the heavy weighting practiced by some.

The various milk coolers were discussed. Coffin's cooler was thought to be good in principle but too slow in practice. Joseph Evans said that a man on his farms used a barrel-shaped vessel, around the edge of which, secured a little distance therefrom,

was a coil of pipe ; ice was placed in the vessel with water, and the milk cooled while passing through. This seemed to work to satisfaction, and the pipe was kept in good condition by the free use of hot water after using, and occasionally soda water.

Dinner hour arrived, and we adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 7th, 1889.

The annual meeting of the Guernsey Breeders' Association was held First Month 7th, 1889, at the Girard House, Ninth and Chestnut Streets, Philadelphia. The attendance was larger than at any time this winter ; nor has it been equaled in interest for quite a long time.

The President being absent, the First Vice President, I. W. Nicholson, took the chair. The minutes of the previous meeting were read and adopted without change. The nomination and election of officers for the year was then taken up, resulting as follows : President, I. W. Nicholson, Camden, N. J.; First Vice President, Ezra Michener, Carversville, Pa.; Second Vice President, Samuel C. Kent, West Grove, Pa.; Secretary and Treasurer, William B. Harvey, West Grove, Pa.; Executive Committee, Silas Betts, Camden, N. J.; Henry Palmer, Avondale, Pa.; Joseph Evans, Marlton, N. J.

Willis P. Hazard, under the head of new business, read an article, giving the result of tests by the London Dairy Show.

George Abbott, Jr., stated that it is proposed by the Milk Exchange, of Philadelphia, to present to the Pennsylvania Legislature for enactment during the present session, a bill regulating the sale of milk ; that said bill provides for the creation of two standards or limits for milk, the higher standard being intended to jeopardize the interests of those engaged in the production and sale of milk of high quality at an advanced price. He further stated that he was opposed to the establishment of any and all standards or minimum limits for milk, because the solids in good and pure milk vary so widely from causes almost beyond control, and because it is a practical impossibility for any one to know the amount of solids in milk in advance

of the sale. He favored inspection and prosecution in actual adulteration, and publication of names and results whenever milk is found below a reasonable limit in per cent. of solids. He regards this feature of the bill as a commercial measure more than a sanitary, and though we, as breeders, should look into the matter and not be entrapped with a bill that would simply tend to destroy trade in high quality milk. Silas Betts sustained the views expressed, stating that what was wanted was pure milk free from adulteration. Silas Betts, George Abbott, Jr., and Ezra Michener are appointed by this Association to present to the Legislature our views on the subject.

Silas Betts then read a lengthy and a very interesting paper, taking for his topic, "Breeds and Breeders." Various points were brought out for discussion; inbreeding and cross-breeding taking the lead.

Thomas Sharpless stated that he wanted to attain certain ends in breeding pigs. He had a sow that had a very good head and ears, but her body was deficient; he got a boar with excellent body and a poor head; the cross made excellent animals. He inbreeds with impunity, and has very superior pigs.

Silas Betts favored inbreeding under certain conditions; take two perfectly sound animals of superior quality and it will intensify those qualities, though of course if disease lurks anywhere, or other defects, they will be sure to crop out.

George Blight asked if any of the audience knew of a cow of the first order, flanders escutcheon, that was a non-breeder. It seemed to be the general opinion that they were not as apt to fail in breeding as those lower in the scale, though they were not altogether exempt.

Henry Marshall read a well written article, giving his reasons for having Guernseys. It was asked if any had ever noticed the navel enlargement as a sign of good constitution, and a superior animal. Some had noticed it and upheld the views, though had never before seen them in print.

The President appointed Willis P. Hazard and J. Schall Wilhelm as essayists for next meeting.

On motion we then adjourned.

WILLIAM B. HARVEY, Secretary.

REASONS FOR KEEPING GUERNSEYS.

It was the desire and wish of one pioneer in the Guernsey cause, several years ago, that each and every member of this Association should answer this query, "Why I bought Guernseys;" but some of us shirked the duty, if such it was, feeling that, perhaps, the answer of one would suffice for all, and thereby avoid repetition. But in looking over the ground for a subject to write a few words upon, to fulfill this appointment, not expecting to bring forth one new idea, there seemed to be no other as appropriate as the Guernseys.

It has been a self evident fact in my mind for years, that perishable products, such as dairy produce and trucking, are to be the main interests for this part of the country represented by this Association, not being able to compete with the west in grain and cattle raising, which was here the regular line of farming years ago, and as New Jersey is practically well adapted for trucking, there seems to be nothing left for the farmers of Eastern Pennsylvania but dairying. This question being solved, the breed of cattle best adapted for the purpose comes next.

Having been in the milk business for years with common cows, the lack of responsibility of the dealers, and the low price for milk, seemed to necessitate a change; so in looking up the different breeds, with unprejudiced mind, I soon decided that the Guernsey came nearer filling the want than any one breed as a general purpose cow, and can truly say that I am more firmly established in that belief to-day than when I bought them. Of course all farmers cannot stock their farms with thoroughbred Guernseys, as the numbers are limited; but they can purchase a thoroughbred bull, cross him on their best cows, and in a few years have a choice grade dairy. The prepotency of the bulls leaves no risk in following this plan, as there will not be a shadow of doubt but that the offspring will be a decided improvement on the dam, and if continued year after year will approach the standard to which all dairymen must come.

The creamery system of making butter is another point in our favor, as milk must be bought there for the number of pounds of butter it will produce, and not by the quart, as the dealer of the city; the time for quantity has passed, and quality must take the preference. Under the old system of making butter it was natural for each farmer to think his pet dairy the best; perhaps many of them he reared himself, as he was not brought into direct competition with his neighbor; but the daily and weekly tests of the disinterested party will soon dispel that delusion. Many farmers are endeavoring to raise the standard of their milk by high feeding, which no doubt can be done to a certain extent, but they must have the right cow first. These things, together with an increasing demand for a better quality of milk in the city, brought about in great measure by our worthy dealer (Abbott) makes the future of the Guernsey very bright in my estimation.

HENRY MARSHALL.

Minutes of Meeting held Second Month 23rd, 1889.

The Guernsey Breeders' Association met Second Month 23rd, 1889, at the Girard House, Chestnut and Ninth Streets, Philadelphia, and we were favored with a good attendance. The minutes of the previous meeting were read by the Secretary.

George Abbott, Jr., on behalf of the committee appointed at last meeting in regard to the bill brought before the Legislature by the Philadelphia Milk Exchange, reported that it was killed in committee. He also stated that the Philadelphia Board of Health had introduced a bill almost identical with the other, having all the objectional features, and in addition, one in relation to the standard for solids. This bill likewise was killed in committee. A vote of thanks was tendered George Abbott, Jr., for his earnest and successful efforts in preventing these acts from becoming laws.

It was voted that our thanks be tendered the management of the Philadelphia Agricultural Society for the use of their room, 244 South Third Street, during the second period in which it was used by our Association. The essayists for the day were Willis P. Hazard and J. Schall Wilhelm. The former furnished us with an interesting paper on the Guernsey farmer, his home and his cattle, as follows:

THE GUERNSEY FARMER.

The Guernsey farmer is a man sui generis. By his descent, his birth, and his surroundings, his character is as distinctly marked as that of any other race noted for his peculiarities. From his Roman descent, for the island was well known to the Romans as Servia, and from the intermixture of Norman blood, he received those sturdy, independent traits of character which are to this day prominent in him; his bravery was not only tested and trained by the many battles, generation after generation, he has fought with many invaders, but by the sea-going habits of many of his ancestors who lived by piracy and smuggling. His manners have been formed by the intermixture of the Romans, Danes, Normans, French and English; all these tempering his thoughts and mode of life; while his language is made up of so many patois, that each of the ten parishes is said to have one of their own. The old Norman French is clung to with pride by many; with others this is modified by modern French, the language of the courts; and with others again by the English. But trade with him in English or French, and you will find him shrewd enough in a bargain. His ideas will not be lofty, and his prices will be guided by the state of the market, only modified or elevated by the number of stock on hand.

Bluff, honest and polite, you will find him truly hospitable, and feels hurt if you do not share his hospitality, or partake of something under his roof. His houses as a rule are not large, nor lofty nor showily furnished, nor is his costume generally of the latest cut or newest appearance. Short in stature, broad and sturdy, he is a typical islander. Partly owing to their laws of heredity and entail, there will usually be found three generations if not four under the same roof. His home and his cattle sheds are almost always of granitic stone, except in the cases of a few of the wealthier and older families, who have built more modern houses of brick. But as a rule, from the time you approach the island until you leave it, the impression is stony: stone wharves and docks, stone houses and pavements, stone stables and roads, and from any side of the island you may jump from the lofty rocks down into the great depth of the sea. But contrasting with this great wealth of stone, for wealth it surely is, as is evident by the daily cargoes of granite blocks which leave the island to pave the streets of London, are the lovely flowering plants in great variety and profusion; the creeping vines and bushes, the holly, the furze, the lush grass, the evergreen oak, and many others which entwine, cover and soften the outlines, everywhere clinging, protecting and hiding, and toning down the landscape into wondrous scenes of beaty.

The good roads of Guernsey, piked and maintained in perfection, winding in and out through the island, as if to accommodate every farm, invite to lovely drives through all these scenes of beauty and care. The wheels of all the vehicles, even to the much used road cart, are large and broad in the tire, as they should be in this country, giving a sense of solidity and safety which is very agreeable. The contrast with our own miserable roads is very striking. There they are not only piked and without a rut, but they are swept; and although there is a raised sidewalk on each side, yet often the traveller will be seen walking in the roadway. These roads invite to walking, and as many of the farmers keep no riding vehicles, or only for holiday occasions, many of them, and the gentry as well, are seen walking. The popular vehicle is more like what is called an open dog cart, which answers the purpose of bringing their small produce to market, and taking out their moderate supplies, as well as conveying their good dame.

Their marketing consists mainly of butter and eggs, a few herbs, carrots, turnips, radishes and other vegetables, some small fruits, apples, pears, chickens, potatoes, cauliflowers, etc. The butter is mostly sold by the women, who take it in a flat basket covered with a nice white cloth. It is made up into round pound lumps, of a uniform thickness of about two inches, their pound being heavier than ours.

In the town of St. Peter-port, the only town of any size on the island, there has been erected a large and very handsome, costly market house, with shops beneath and marketing in the second story. Here in the middle of the hall is a double row of benches, back to back, where sit these gossips with their flat covered bas-

kets on their laps, and as the passer by approaches, the rich-in-color pats of butter are uncovered with a view of tempting a purchase. We shake our heads and the cloth is quickly drawn over them again, and they go on with their gossiping. The amount in each basket is small, a few pounds and some eggs, and they patiently wait until all are sold, and then depart to make their little purchases, and in many cases trudge home, or ride in the cart on the single seat, alongside of the "gude" man.

The butter is the best testimony of the value of the Guernsey cow, for in many cases, made with little skill, it yet holds its own so as to command three pence to four pence more than the Jersey butter, or the butter from the adjoining coast of France. The shop keepers say they sell both kinds to the same customer; the Jersey is bought for cooking, the Guernsey for the table, at the extra price. In neither of the islands is butter made with a tithe of the care given to it in this country.

In most of the homesteads one corner of the kitchen will be boarded off for the household larder. Here upon shelves will be set crocks, from whence the milk, mainly the whole milk, is taken to churn. This is usually the old style dash churn, the handle connected to the crank of a wheel, a cord passing over a pully. The wheel is kept regularly turning, oftentimes for an hour and a half, till the butter comes. Of course it requires no coloring at any season of the year. It is then made into pats, stamped and marketed the next day.

The churning of the whole milk not only makes the best butter, but it is a necessity, for not keeping many cows, usually only two or three in milk, it would not do for them to wait for a sufficiency of cream to be gathered. The milk is but little used in the household, for it must be reserved for the source of revenue derived from the butter. Nor is the butter-milk valued but for the pig's use. Oftentimes we surprised them by pushing aside the always proffered bottle, and saying, "We would prefer a drink of new buttermilk." Milk they were charry of offering, but when we would say, "We want to taste the milk of the cow you are offering," or "of the dam of the heifer you want to sell," they would bring a pitcher and tumblers quickly; and such milk! It was rich and unctuous enough for any palate. Our custom was to start off in the morning at nine o'clock, in a hansom, and return at six o'clock to the hotel for dinner. We might stop at a dozen houses, at every one of which we would be desired "to come in and take something." This usually was accompanied by biscuit or cake. In Guernsey they make a special cake, something like a cruller, a crisp doughnut. Never would they close a bargain without "taking something" to close it, a sort of enforced hospitality, while their joy at a sale made a fit accompaniment.

They are pretty shrewd dealers, too, not offering their best until their pride is touched, or they fear losing a sale. It usually takes the man and wife, and sometimes the whole family, to make a sale and help the extended talking and praises. Finally, when

the difference is down to a pound or two, the "gude" wife, with a nudge to the old man, runs into the house, declaring she could not think of parting with her pet at any such price. The buyer moves off to his carriage, the adieus are said, but the farmer cries a halt, and he will go in and see what the "missus" will say to your final offer. A few minutes is occupied by their chuckling that they have got the offer they at first in their minds had meant to take, and out they both come, make a further faint show at resistance, and only accept by saying, "Well, come into the honse and take something," which experience has told you is the final assent. Sometimes, just to tease them, the buyer may say, "No, I will not touch a drop in your house until you sell me the animal." And even then they often will not say the yea, and you turn again to go, and they say, "Well, book the animal at twelve pounds, but you must come in."

The Guernsey farmer usually expects to sell from one to three heifers from sixteen to twenty-two months old every year. This is an important source of income to them. If there is a slinker or a roarer, the first being one that has slunk her calf, and the latter one that is a non-breeder, sometimes one will be found that will endeavor to put them off upon the first innocent that comes along, though the law is against their doing it knowingly. If not successful, then she must go to the shambles, for they can't afford to do without that part of the income she would produce. Every part of their little farms must be made to pay, for the rent of five to ten pounds per acre must be more than raised.

The law of heredity assures the constant cutting up of the farms into smaller patches. The eldest son has a right to take the house at an assessed value of disinterested parties, but he must pay a proportion to his brothers and sisters. It is not as it is in England, where the landed estate is entailed. Each gets a share of the farm, which they must let or sell to the older brother. In most cases the younger sons start off into the world, and we have some of them as our most thrifty citizens. Thus their cutting up process reduces the small farms to still smaller, until the evil corrects itself, and purchasers or marriages take place, and enough is kept together to make it pay to farm it. A farm is usually only from five to eight acres in extent. But it is worked more like a garden than a farm. Of the total area of low water, of 15,569 acres or more than twenty-four square miles, 10,000 acres are under cultivation. The island is populous and wealthy, the assessment value in 1875 was, of the town parish, 2,262 pounds per head, and the rural parishes, 1,233 pounds per head. This is tolerably evenly distributed, but there are many wealthy gentry whose numbers rapidly diminish the assessment of the working farmers. Population, owing to emigration and the dispersement of families, does not increase appreciably. Taxation is very light. The soil is mostly a sandy loam and disintegrated rock, with, in some places, a subsoil of unprofitable clay.

Nearly all the grain is imported, none being exported. Their exports are principally early and late potatoes, to the London mar-

kets, extra vessels being put on to carry these to market early in the season ; large quantities of apples, pears and other fruits ; garden produce ; the most delicious grapes are raised in miles of glass houses, which require no extra heat. Parsnips are largely raised, though not so much as formerly ; to these may be attributed the rich flavor of Guernsey meat, the finest I ever tasted. Cider also is made, though not so much as formerly ; it is not of superior quality.

Figs grow in the open air trained on flat open trellised arbors overhead. Cauliflower and broccoli are raised and sold in London market in large quantities. Poultry is much raised on the farm for the market and for the sale of eggs.

The cattle of the Channel Island are brilliant examples of in-breeding and for a special purpose. It is a well believed fact that the islands are but the ends of former promontories connecting them with the main land, Guernsey and Alderney with Normandy, and Jersey with Brittany. If the cattle of Guernsey were originally from Normandy, as we believe, they started with an excellent character for rich butter properties. The butter of the Continent and Brittany cows is sold in London markets as the very best made. The Guernsey cows fed upon rich pastures and a variety of food, cared for with the greatest attention, and more or less related and inbred, free from introduction of any depreciating variety of stock, have thus for generations inbred their rich traits, until to-day, they stand pre-eminent as the Queens of Quality. It is believed that if a more liberal scale of breeding had been earlier adopted, if more attention had been paid to the use of only the best bred bulls, the Guernsey breed would more generally be the most popular and valuable of all breeds to-day.

The small size of the farms, moderate amount of produce raised, with the consequent handling of but little money receipts, the little contact of the inhabitants with the outside world has made a shilling as big as our Bland dollar, and consequently no money is spent that can in any way be saved. Thus the price of the service of the bull is important to them. Another effect is produced by the market price of bull beef, and by the cost of keeping a bull. Beef of bulls has to be sold as such in the market, and after two years of age it is not considered as good, and brings a less price ; then with their small farms, and a few cattle upon each farm, a bull would not pay to keep. Therefore bulls of immature age are often used ; the price of service is ridiculously low, from a sixpence to a shilling, or for a superior animal, two and six, three and six, or even five shillings. Formerly you might ask a Guernsey farmer for the pedigree or for the name of the parental bull, and in many instances he could tell you neither, nor oftentimes would he recollect what bull he used, but if you press him he will say, " Oh, I believe it was a bull of Mr. Mahy's," or other name. They were satisfied with the well known superiority of their cattle. But the strict rules of our American Guernsey Cattle Club have worked much change, and the example of the few enlightened breeders is being imitated ;

to this and other improvements the English Club has also contributed.

Many of the largest and best breeders on the island have been English and Scotch gentlemen who have bought landed estates in Guernsey and done much to improve the breed. Some of them have sold out and returned to England and Scotland, while also the great stimulus of the American market, having been withdrawn, it is not so profitable as formerly. England is the best market for Guernsey now, and the establishment of a club register has done much to elevate the breed and to improve also the breeding.

Breeding within narrow lines, with no admixture of any foreign blood, the type has been firmly fixed for shape, for color, for quality, for docility, so that at present the Guernsey is noted for so rich quality, that the yellow dandruff of her skin has been mixed with oil and used as a pigment. The color prevailing is that of orange or lemon, in lighter or darker shade, more or less blotched with white. The well known high color of the cream and the self colored butter, is due to the rich unctuousness shown in the skin and glands of the animal. Formerly many Guernseys were of a black color, but this has been bred out, leaving only traces in some brindle marks. Quietly this breed is working its way into greater popularity each year, especially with the most intelligent and practical of our farmers; its size, richness and docility, and its ability for one animal to color and enrich the yield of ten ordinary cows, proving its great value to the farmer.

The style of farming strikes an American with its novelty. The scarcity of implements, the crude nature of those that are used, the manual labor that is expended without stint, the spading where we would use a plow, the constant care of the cattle, the repeated cropping, all these necessitated by the limited size of the farms, and the necessity of making the most of every inch of ground to pay the rent of five, eight or ten pounds per acre, the rent often being more than land can be bought for in Chester County; all these elicit remark and attention. The stables are low, stone structures, badly lighted and ventilated, and in winter time seldom cleaned; dirty, wet and reeking with fumes from the bed of manure from the uncleaned stables; the cattle uncleaned in winter time.

Large amounts of roots are raised, forming the main supply of food for the cattle in winter. These roots are often piled on the ground near the stables, covered with long grass, and the pit opened at one end and fed without fear of frost, from the end of the pile until exhausted, during their short winters. We have not much to learn from the Guernsey farmer and breeder.

WILLIS P. HAZARD.

When he had finished, discussion on the article ensued.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Third Month 29th, 1889.

The Guernsey Breeders' Association met Third Month 29th, 1889, at Girard House, Ninth and Chestnut Streets, Philadelphia. The minutes of the previous meeting were read and adopted. Amos E. Kaighn, Haddonfield, N. J., was nominated a member of the Club. The rules were suspended and he was elected a member at this meeting.

The Committee appointed to represent us at the Philadelphia Pure Food Convention was not ready to report, and is continued.

Silas Betts stated as a matter of information, that the Executive Committee of the American Guernsey Cattle Club had selected two cows for the New Jersey Experiment Station. They would be shipped soon. The other cow had not been positively selected, but will be in the near future. These three cows, together with a like number from the other dairy breeds, are to undergo a three years test at the station, and the results of the experiment will be of much interest to the dairy public.

Of the calves for the New York Experiment Station, two steers have been chosen, and will soon be shipped. The two heifers have not been definitely selected, but there will be no difficulty in finding suitable specimens. These calves, together with a like number of other dairy breeds, are to be reared under like conditions, and records kept as to their progress. This is in addition to tests as dairy cows; the steers are to be tested as to their beef qualifications. We were informed that other States wished to experiment with the different breeds. It has been proposed to send committees around to the farms to take charge of the herds from time to time and make tests.

Ezra Michener then read an interesting essay on "The Future of the Guernsey," as follows:

THE FUTURE OF THE GUERNSEY.

In considering this subject, the first question that presents itself is, what are we keeping our cows for?

I have no statistics at hand on the subject, but presume that three-fourths of all the milk produced in this country is used for the manufacture of butter. If this assumption is correct, it is very easily seen that to produce this article economically we should not waste our time and money on any cow that is not a butter cow.

There are two breeds of cows claiming the distinction of being butter cows par-excellence, and it remains for us to make our se-

lection between them, and allow the others to be kept for different purposes as may best suit the owners.

Another aspect of the subject comes up before our vision to aid us in our selection. The same proportion, three-fourths or more, of all the butter produced, is made by farmers, and people who live in cottages and keep only a cow or two, for their own accommodation in furnishing them with at least half their living, or the means of procuring the same through the sales of their surplus production.

In the vicinity of our large cities there will be seen many fine country residences, occupied chiefly by merchants doing business in the cities, but preferring to live in the country and enjoy its many pleasures, which are denied those who have no such outside establishments. These people being generally wealthy, can afford to have whatever most pleases the eye, to adorn the lawn around the house, as well as to supply the inside with its useful and fancy articles. At such a place as this the Jersey cow will always stand unequaled. Her beautiful fawn color, and expressive eyes, will fill with admiration all true lovers of the beautiful, and her rich milk will supply a want of the household that, after having once appreciated, they would not like to do without. I do not wish to be understood that this is the only place for the Jersey, as I am well acquainted with Jersey herds kept by farmers for business purposes, that are profitable dairy cows.

To make butter economically, to supply the demand at present, needs a butter cow bred for that purpose alone for generations, and such we claim is the Guernsey. We find her on the Island of Guernsey as being the chief support of the large population there, and her butter rated at a higher market value than that produced on her sister island of Jersey. I do not claim that the milk of the Guernsey is any richer in butter fat than that of the Jersey, but that it is higher colored, and the butter made, partakes of this high color and pleases the eye of the purchaser as only Guernsey butter can, without the aid of artificial coloring, The Guernsey being a larger, stronger cow than the Jersey, giving more milk in a week, month or year, and of equal richness, and being sufficiently beautiful to please all but the most fastidious, is the coming cow of this country. A herd of Guernseys is indeed a beautiful sight to behold; their yellow and white markings, or the different shades thereof blending so harmoniously, almost compel one to think that there is butter in their very looks.

This good size and hardy constitution is a valuable characteristic of the Guernsey for the average farmer; not that she is a large cow and will make a huge mass of old cow beef when her days of usefulness are over, at a greater cost than it will come to in the open market; but having the size and hardiness, she is therefore able to withstand the great drain upon her system as a good breeder and a large butter producer combined.

I have frequently heard the question asked, why has not the Guernsey made such remarkable tests as the Jersey if she is as

good a cow ? The fact stated previously that the two breeds have fallen into different hands accounts for much of the seeming inferiority of the Guernseys. Tests of from fifteen to twenty pounds of butter per week are quite common among them, with plain, every day fare, and this I consider as good, when the different conditions under which they were made, as the larger tests of the Jerseys made by artificial methods of feeding and care which cannot be successfully carried out by the ordinary good dairyman, who has his living to make from his cows. As the greater part of the milk and butter consumed has to be made by the above class, they naturally look around to see what kind of a cow they want for economical production, and also one that will afford them pleasure to look upon, so the day of all drudgery and no pleasure on the farm is rapidly passing away. The Guernsey fills the above measure full to repletion, and is so acknowledged wherever known.

There is a large demand now springing up for just this class of cows, greater than can be supplied with the limited number on hand, and it is highly important that we endeavor by careful breeding and selection to raise the standard of quality to the highest possible degree consistent with profitable work. The best way at present for those who wish to improve their herds of native cows, is to purchase a Guernsey bull and raise his calves from the best cows they have, and after a few years by this process they can have practically as good cows for the production of butter alone as if they were thoroughbred and registered.

This then is the future of the Guernsey, namely to breed up with them on the common cows of the country, until such time as full bloods are in sufficient number so that all who wish can obtain them. When this is accomplished, we will see them adorning almost every hill side, plain and valley, and yielding their delicious products to gratify the advanced tastes of the farmer's family, and furnishing him with the means to live more at ease and enjoy life as best befits every public benefactor.

EZRA MICHENER.

S. C. Kent objected to the statement in the essay in regard to Jerseys always taking the lead in beautifying gentlemen's lawns. He thought the Guernsey equally handsome. Others upheld his views.

It was voted that hereafter the roll of members should be called at each meeting, and that a record of the attendance be kept by Secretary.

I. W. Nicholson invited the Club to meet at his home the last week in Fifth Month. There will be no meeting next month.

Thomas Sharpless and S. C. Kent were appointed essayists for the next meeting.

C. B. Cochran, Inspector of Food to Pennsylvania State Board of Agriculture, presented to the Association a new method of estimating per cent. of fat in milk. The method seems to possess the merits of simplicity, accuracy and rapidity. The following is an outline of his mode of testing milk: Into a testing glass constructed especially for this purpose, is dropped ten cubic centimeters of the milk to be analyzed. To this is added ten cubic centimeters of an acid mixture. The contents of the glass are then heated to nearly the boiling point for ten or fifteen minutes. After cooling, ether is added to the contents of the glass, and the whole shaken up until well mixed. The ether is then boiled off. When the ether is all evaporated, a layer of clear fat is found floating on the liquid. The volume of this fat is then carefully ascertained, and from this volume the per cent. is found by reference to a table prepared for this purpose. Any information regarding the apparatus can be obtained by addressing Prof. C. B. Cochran, West Chester, Pa.

Four samples of milk were analyzed, much to the satisfaction of the Club.

Then adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fifth Month 21st, 1889.

The Guernsey Breeders' Association met Fifth Month 21st, 1889, at the home of Isaac W. Nicholson, near Haddonfield, N. J. The minutes of the previous meeting were read by the Secretary and adopted. Twenty-five members responded at roll; there were also quite a number of visitors, showing that the interest in the Association is well maintained. G. E. Gordon, of Koshkonong, Wis., was nominated a member of the Club. The rules were suspended and he was elected a member.

George Abbott, Jr., reported on behalf of the committee appointed some months ago to represent us at the late "Pure Food Convention," held in Philadelphia. He was at the exhibition and found that it was rather an advertising concern for the various exhibitors. There were no essays nor any public discussions which would tend to elevate the standard or the purity of our food. Other members in attendance held the same views.

Silas Betts, in behalf of the Committee of the American Guernsey Cattle Club, reported that they had filled their contract with

the New Jersey Experiment Station for Guernsey cows. Two of the cows had been delivered, and the third and last was expected to have been sent to-day. For the New York Station, besides the two steers sent, reported at our last meeting, two heifers have been chosen, one from the herd of S. L. Hoxie, the other from that of Silas Betts.

Our essayist, Thomas Sharpless, was not in attendance, and his essay was not forwarded.

I. W. Nicholson stated that he built a silo last year on a very economical plan—hemlock boards double, tarred paper between. He intends building another this season. He feeds other food containing more of the albuminoids; uses hay once per day. He thinks digestion is more easily performed when the corn is matured. No corn meal was needed. He has a herd of nearly one hundred cows, some registered Guernseys, quite a large number of grades, and some with but little Channel Island blood in them. The milk is retailed in Camden, sold from his own wagons at a good figure per quart. Since the use of ensilage, he has had no complaint as to the quality of milk. He thought with ensilage, the cows shed their coats sooner in the spring. In filling, he had a division in the silo, putting in one pit one day and the other the next. He thought cows did better with hay once per day.

G. E. Gordon favored the B. & W. ensilage corn; also the red cob southern corn. Various other varieties were mentioned.

Our western member also mentioned another subject in regard to the publication of the herd book. He wanted to see the registry published in bulletin form, say once in three months. As it is now we can probably find an animal born in 1885, but those of late years are unknown as far as the official published records are concerned. If the herd book was kept up near to date, it could be seen just what animals were recorded, and a distant buyer could see just what there was in different parts of the country. As it is, he found it necessary to spend quite an amount of money visiting personally the various herds.

Samuel C. Kent was appointed essayist for next meeting, and Thomas Sharpless was continued to read his essay.

After spending a very pleasant day at the home of our host, we adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Seventh Month 26th, 1889.

The Guernsey Breeders' Association met Seventh Month 26th, 1889, at the home of William B. Harvey, near West Grove, Pa. The wet weather, causing a backward harvest, had some effect on the attendance, which, however, in spite of its drawbacks, numbered about thirty-five persons.

At ten o'clock the meeting was called to order by the President. After roll call, minutes of the previous meeting were read and adopted.

Silas Betts, in behalf of the American Guernsey Cattle Club Committee to furnish Guernseys to the Experiment Stations, stated that the Vermont Station had been wanting one or more specimens of each breed, hiring, and testing them from six months to one year. The committee selected a cow, made preparation to ship her, when a letter was received from the station (which was read) stating that the test had to be given up, as the representatives of one of the prominent breeds refused to permit the results to be official.

Samuel C. Kent was not prepared with his essay, and Thomas Sharpless was called upon, who read a very creditably written paper on "Breeding for the Best Cows," as follows:

BREEDING FOR THE BEST COWS.

At our March meeting we had a slight discussion on how to breed the best cow, occasioned by the reading of an essay by Brother Betts. As you have appointed me to prepare an essay for this meeting, I will take that subject for my text, and give my views how to do it.

Now it is of greatest importance to us Guernsey breeders to be able to produce the best, deepest milking, and most profitable cows; for the day has gone by when one can sell a cow or calf simply because it is a registered Guernsey, without any regard for its intrinsic worth, or the performance of its ancestors at the pail, while there is a good demand for those of superior excellence. And secondly, it is, I believe, just as easy to breed good cows as poor, or second rate ones.

Wallace says "that like produces like, or the likeness of some ancestor." This is undoubtedly true. So, if we breed from poor or indifferent cows, we get the same kind, and there is no advance in quality. Now, what is to be done? How is this increased capacity at the pail to be produced? This is the question we want answered. And I say most unhesitatingly that to the most of us this improvement must come through the sire. We must raise

bulls from good cows only. If you have the money to do so, go and buy, regardless of cost, a bull from a deep milking strain. But if this "regardless of cost" stands in the way, then do the next best thing. Take the best cow you may have and breed her to a bull of the best milking strain available. You may have to send her some distance to do this, but there are such bulls. If luck and skill favor you, and you get a bull calf, when of a sufficient age, breed him to his dam. Now remember that the deep milking qualities of the dam are what you are after. In the son you have half of the dam. In the produce of this union you have three-fourths of the dam, one-half on the dam's side, and one-fourth from the son. Should skill and fortune once more favor you with a bull calf, you will then have an animal that will have a strong inheritance of the deep milking qualities of the good cow you began with, and a bull one can use upon the rest of his herd with some reasonable expectation of an increased milk yield in the offspring.

The laws of inheritance are, to us, mostly a mystery. Indeed I very much doubt whether we now know as much of the science of breeding animals as did Jacob, of Bible days, when he beat Laban out of all the best of his flocks and herds by breeding ring streaked and speckled cattle at will. Still, with the knowledge of the laws of descent in one's mind, our domestic animals are very plastic in our hands.

Webb, the Southdown breeder, is reported to have said that he could breed either mutton or soap fat, at will. Some points are to be seen and observed by any one, and one of these is, that a son usually inherits from his dam and transmits to his daughters, while the daughters inherit from their sire and transmit to their sons. I say usually, because this rule is not absolute, but only general; for there are some animals which seem to have in them the power to transmit to their offspring of both sexes certain qualities peculiar to themselves. As an instance of this, I will mention as being familiar to many of you, the persistency of the dun color in the Stanley strain of horses.

Now whence comes this prepotency? Is it not an inheritance peculiar to the animal that is strong enough to override, cover up, so to speak, all opposing elements? What we want then is to establish in our bull this power or prepotency, to transmit to his heifer calves the milking powers of the dam. Now, by the doubling upon the dam's blood, we attain this transmitting power in a double degree; first, by the dam's transmission to her son, and secondly, from the son back through, and reinforced by the dam once more. Thus you will see we have a very strong inheritance of the good milking qualities of the dam, and this, together with the rule governing the transmission of qualities from grand-dam through the son to the grand-daughters, would seem to be the surest road to an improvement in the milking qualities in our cows.

I have had men frequently tell me that such and such cows were from certain cows, usually their best, but were not as good as their dams. When I came to inquire as to the sire, they either did

not know or care anything about his milking descent. Now, this rule is of great importance, and should be borne in mind, for just here is where many fail.

A man has a good cow, serves her to any bull that is handy, the result happening to be a heifer calf, is raised, and the owner disappointed because she is not equal to her dam, says it don't pay to raise heifers. A plain case of inheritance, of a daughter inheriting from the sire. Now, by way of illustration, I will give you a little of my own experience. A number of years ago I was breeding a good many hogs, Chester Whites. We were then, and are for that matter now, quite particular about the shape of the head, and the set of the ear. I had a sow that had just the head and ear that was fashionable, but she was not nearly so good in the body as was desirable. At a neighbor's I found and purchased a boar that was nearly perfect as to body, but with the ugliest head that was ever on a hog. Now the problem was to get the sow's head onto the hog's body; and this I attained by breeding first my pair together, then a son, the product of this union, back to his dam, and taking a daughter from this product, I bred her to the original hog. The product was of exceptional beauty and perfection.

Now this was a far more difficult problem to work out than it is to perpetuate the good milking qualities of one cow. As I had to get two points, one of which each animal was deficient in, brought together in one. Now note how this was done. I doubled up on the dam to secure the head and ears, because that I had to have; and then to perfect the body, went back to the original hog. If it had been the good qualities of the sire alone I wished to preserve, the process would have been somewhat different. In that case I should have had to breed him to one of his daughters. This was simply selection, and was not done for the sake of inbreeding, but to catch certain good points, and what I would call breeding for a purpose. If our worthy leader, T. M. Harvey, had just doubled up on "Worthy Beauty," or if the owners of "Lady Emily," or "Countess," or several others I could mention, were now to do the same, it would not be many years before we would know where to go to buy our bull calves. Doubtless some of you will say that there is danger of injuring the stamina or strength of the animals by this process, and will claim very justly, that just as you intensify the good qualities, you intensify also the weaknesses and imperfections; and this is true. But the way to avoid this, is to begin without any. It is very poor policy to breed that kind at all, and if you start without any weaknesses, you will have none. For I maintain that with healthy animals, the close breeding has no degenerating influence. This can readily be substantiated by the experience of the Booths and Bates among Short-Horns. A Mr. Price who bred Herefords for forty years without any outside blood, starting with a purchase from a Mr. Tompkins, who had inbred for forty years more without a cross, from a beginning with two heifers and one bull—making eighty years of inbreeding. Also, E. Hammond, who inbred Merino sheep for sixty years. Also, Webb, with South-

downs, and many others. [See Miles on Stock Breeding.] A short time since I saw a stallion advertised, which showed he was by a son out of his dam.

You will also find in the Bible account of Abraham, that he married his half sister, Sarah, and sent his son Isaac to his brother Nahor's, where he took to wife his first cousin, Rebekah, who in turn sent her son Jacob to her brother Laban's, where he married his two first cousins, Leah and Rachel, and from these consanguineous marriages sprang the Jewish nation, who were as the sands of the seashore for multitude. And the laws governing physical life are the same to-day as they were then; showing that there is nothing inherent in the inbreeding process to cause degeneracy; in fact rather the reverse.

These Short-Horn and other breeders did not inbreed for the sake of inbreeding, but for a purpose, and that purpose, the production of an animal to fill their ideal, the animal they saw in their mind's eye; and the resulting Short-Horn, Hereford, Southdown, etc., of to-day stand for types of health, hardiness, vigor and perfection. Thus showing conclusively that there is nothing necessarily harmful in the process, if only care is used. Though I do not advocate it only as a means to an end. My rule is to select my breeding animals and mate them without any regard to relationship whatever, provided they have the points I want, and I believe this is the correct way. In fact you can scarcely advance at all without taking advantage of the good points of some chance and exceptionally fine animal. In and line-breeding have this advantage, that one knows pretty nearly what to expect from a given union, while with any out cross, you encounter an unknown element, and cannot tell what the result will be, whether it will harmonize with your blood or not.

There seems to be a much greater tendency to sport back, or revert to former types in crosses than in line breeding, and for this reason it would seem desirable to adhere to one strain of blood, or at least to those animals that show in a marked degree those qualities we wish to preserve. These points are for you to think about, not to act upon rashly, but to study, and with the hope that in the near future, some who now have the good cows to begin with, may give us something that will be the peers of anything and any breed on the continent. For that the Guernsey has the capacity for such development I have no doubt. All that is needed is a master hand to develop some one with a clear conception of what is to be done, and how to do it; discarding all fancy points, if they stand in any degree in the way; for the man who has a cow that will produce twenty or more pounds of butter in a week, or four or five hundred in a year, does not need to rely much on fancy points to recommend his stock. Such a one would sell even if she did not have an escutcheon.

THOMAS SHARPLESS.

Silas Betts commended the article, and thought those who expected to breed strains that would distinguish themselves, must adopt some such course. He thought great care must be used in inbreeding, and not go at it promiscuously. That because an animal is inbred is no reason of her superiority if she has poor animals to start on. There was better reason to expect good results by crossing than by inbreeding. He thought one point was too strong, viz, that good animals could always be secured by careful breeding. Our essayist, however, held to his point, adding that good feeding was an important part of good breeding; that a good breed could not be maintained without it.

R. H. Hodgson thought the essayist had presented the right course, that he would not accept the handsomest bull ever imported unless he knew of its parentage.

The practice which has been too prevalent on the Island of Guernsey, of using a bull a year or two, then getting another, and always, or nearly so, using the bull whose services cost the least, was a very wrong one. That a good bull should be kept as long as he could be used. Many times, the value of a sire is not known until he is dead, and his progeny tell only too late of his sterling quality.

George Abbott, Jr., said that in the human family, the son is apt to take after the mother; that great men mostly have great mothers.

Alexander Scott thought we must be very careful about inbreeding; he has not always had the best results therefrom.

Some members had experienced difficulty in breeding cows of recognized beef breeds to Guernsey bulls which are of a distinct butter breed. Neither breed would yield its traits, and the result did not give satisfaction. Better results were to be had by using a good grade cow which would yield to the strong butter proclivities of a Guernsey bull.

John C. Higgins had experienced trouble in finding a bull good enough for him, though he had paid liberal prices; he thinks such scarce; to attain them requires most careful breeding and testing for years; that evil practice of using the cheapest bulls on the Island is hard for us to overcome. Thomas Sharpless thought we must not breed too much to escutcheons, that it will ruin any breed; better breed for other good points; the Jersey Club had discarded it from their scale of points. Silas Betts thought we must breed for the winners; to attain this we must breed from the winners. R. H. Hodgson thought we must not make our decisions too soon,

that poor looking young animals sometimes come out ahead when they mature.

S. C. Kent speaking of the stamping power of certain animals, stated that he had a cow with a crooked horn, and that out of three calves by two bulls, each had a crooked horn.

Harry Palmer thought our essayist was right in his ability to get good cows; that if the dam was prepotent in excellent milk and butter qualities, she can't help bringing good milk and butter progeny.

The dinner hour having arrived, the Club adjourned until 3 o'clock, P. M. The noon-day repast being over, an inspection of the host's stock, buildings, etc., was in order. Under the circumstances comment is hardly in place, suffice it to say that quite a while was spent in looking over the herd of cows, heifers and bulls, about sixty-five in number, the majority being registered Guernseys. With some the pig pens were a source of attraction. In them were over one hundred porkers of various ages. The new silos, having a capacity of nearly 450 tons, were inspected, they being built in a bay of the large barn, and connecting with stables below.

Near three o'clock the meeting was again called to order. The Secretary asked for methods of manipulating ensilage while filling the pits. Various members who had had experience gave their methods. Quite an amount of information was brought out.

The President announced as essayists next time, Samuel C. Kent and S. Morris Jones.

Then adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Ninth Month 27th, 1889.

The meeting held at the home of Alexander Scott and Son, Concord, Pa., Ninth Month 27th, 1889, was for some unexplained reason very slightly attended. We much regretted that our veteran breeder should have an attendance of but nine to enjoy the hospitalities of the occasion.

After roll call, the Secretary read a letter from Henning G. Taube on behalf of the United States Butter Extractor Company, in regard to exhibiting one of their machines before the Association. The Secretary was authorized to make arrangements as to date of the exhibition, which will be held in Philadelphia.

The non-attendance of many of our members was mentioned. Some never attend our meetings. The discussion led to the folowing motion, which was carried, viz: That the Secretary shall send notices of the annual meetings only, to those members who do not attend once a year.

Neither of our essayists were able to attend. S. Morris Jones sent a paper on grade Guernseys, which was read by the Secretary. It was thought a very good point in the essay where was cited the practice of farmers buying from breeders thoroughbred bull calves at low prices, probably from the poor cows. The poor bull calves should not be used. They reflect discredit both to the breed and breeder. Better get good bulls at higher prices, than run the risk of a bull of poor quality. There are poor cows in every breed, and though thoroughbred, their calves, unless the sire is very superior, are not apt to add to the merits of the breed.

After dinner we went out to view the large herd of Guernseys, mostly thoroughbreds, some of them coming from noble families of earliest importation, whose pedigrees had not been traced, though pure blood. Of the four bulls, "Garfield" seemed to be given the preference as to merits. "Jeweler VIII" made an excellent showing. Numerous thoroughbred heifers made a feast for our eyes, and while we did not covet our host's stock, we thought a half a dozen of those youngsters would be an acquisition to any herd. After spending the day pleasantly, we parted to again convene at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eleventh Month 29th, 1889.

The first of our winter meetings was held Eleventh Month 29th, 1889, at the Girard House, Ninth and Chestnut Streets, Philadelphia. After disposing of the minutes of last meeting, read by the Secretary, a letter was read from the United States Butter Extractor Company, of New York, stating that it would be impossible to exhibit their machine before our Association before the middle of next month. (A letter since received by the Secretary states that the time will need to be prolonged a month later.) It was decided to hold no session next month, and let our next be the annual meeting.

As the extractor was expected at this meeting, no essayists were appointed last time, and in the notices sent out by the Secretary, each member was asked to bring up a subject of interest.

Silas Betts was first called upon; he read from the Bulletin of the New Jersey Experiment Station regarding the tests being carried on there with the different breeds of dairy cows; the Guernseys making a good showing, though all were somewhat lower than might have been expected, owing to the unusually damp season, causing the grass to be less rich in food elements.

W. P. Hazard read a number of reports from the London Live Stock Journal, giving analyses of the various dairy breeds, including Guernseys, Jerseys, Holsteins, Ayrshires, and Short-Horns. George Abbott also gave us the average of his dairies of common cows, yielding 12.98 per cent of solids; also other analyses which are systematically carried on in his establishment on a large scale.

There were some objections raised in regard to the Experiment Station cows. It was thought the feeding should be more uniform with all breeds at given periods, or that they be fed in proportion to their weights, having deference to their condition of pregnancy. It was thought that the great variety of food given to the different animals at the same time would not bring proper results.

Elwood Evans thought we should ventilate our failures as well as our successes; that at the present time he was troubled with premature births. He thought they were occasioned by cows being hurt. Samuel D. Hughes thought abortion was often caused by fright, and mentioned a case where a cow which had never seen a pig, suddenly came upon one, and being pregnant, very soon dropped a premature calf. Silas Betts and others did not favor removing of the placenta.

William I. Tomlinson gives ten drops of pulsatilla, if the afterbirth does not come, then gives secale (ergot) in weak solution, about a teaspoonful in water. Axexander Scott gives before calving, one pint flaxseed oil and a teaspoonful of ergot, and after calving a bucketful of bran mash, with some wood ashes in it, and he does not have any trouble with the cows holding the placenta.

David Hoke asked how he could best use his cut corn fodder for dairy cows. The Secretary gave the method used by him, before adopting ensilage, viz: mix cut fodder and hay, put in a large mixing trough, sprinkle enough of the meal ration on to make a moderately rich mess, pour hot water on, put down lid of trough, leaving food stand several hours, which mellows it so that the stalks do not make mouths sore. (Add extra meal dry to the good milkers.)

Willis P. Hazard told of the breeds of cattle at the dairy show at London. He said the Kerry breed were attracting considerable attention. The Queen and Prince of Wales had some of them, and prices ruled high, twenty-five to thirty-eight guineas being paid for them at sales. They come from the County of Kerry, Ireland, and seem to be continuous milkers. The Guernseys made a good showing, and met with popular appreciation ; they were mainly from the herds of the Aylesbury, and Express Dairy Companies. The Alexander Separator was on exhibition ; it seemed to work well. Friend Hazard thought that the agricultural implements, both at the London and Paris Expositions were very good, a number of which might be copied to advantage in this country.

The dinner hour arrived, and adjournment followed.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 6th, 1890.

The Annual Meeting of the Guernsey Breeders' Association was held First Month 6th, 1890, at the Girard House, Ninth and Chestnut Streets, Philadelphia.

After disposing of the minutes of last meeting, the Secretary read a letter from the United States Butter Extractor Company, inviting us to visit their creamery, etc., at Newark, N. J. After some discussion, the invitation was accepted. Arrangements were left to the Secretary, who was also authorized to find out from members and others interested (if on inquiry the latter would be welcome) how many expected to go. It was expected that special railroad rates could be secured.

The Secretary read a notice of the annual meeting of the State Board of Agriculture at Harrisburg, 22nd and 23rd inst. The Association voted to send to it as delegates, Henry Palmer and Willis P. Hazard ; the same gentlemen were also appointed delegates to the annual meeting of the State Agricultural Society, held at the same place on the 21st inst.

I. W. Nicholson reported that the New Jersey State Board of Agriculture held its annual meeting on the 29th, 30th, and 31st of this month. This Association appointed I. W. Nicholson and Elwood Evans to represent us in that body.

As some members who were expected were not present at the proper time for the annual election, it was now taken up, and resulted as follows: Officers for the year 1890—President, Ezra Michener; First Vice President, Thomas Sharpless; Second Vice President, Joseph Evans; Secretary and Treasurer, William B. Harvey; Executive Committee, Silas Betts, I. W. Nicholson and George Blight. The new President taking the chair asked for essays. The Secretary read a paper on "Cream Raising."

The paper caused considerable discussion, particularly on cooling and aerating by cold air. George Abbott had experienced difficulty in getting a cream that was thick enough. Had tried to aerate, but was not successful. Ezra Michener had tried setting his milk by cold air process in deep cans. It would work well if it was left twenty-four hours, but this required too much space. He abandoned it.

Edwin James had used Coffin's aerator with satisfactory results. It seemed to take off the odor of cabbage. Elwood Evans now uses the Hewling's cooler, which has forty-eight feet of trough in eight sections. The trough is double. One, four inches wide, rather shallow for milk; inside of and soldered to another trough same width, but twice as deep; this one is for water. When mercury is down to forty degrees no water is needed. Three minutes is required for milk to pass through. He thinks this apparatus has saved him several car loads of ice this past fall.

George Abbott had intended to entertain the Club at its next meeting, at which time the Extractor was expected in Philadelphia. Being disappointed in this, he kindly invited us to be his guests at the next regular meeting; the arrangements for which were left for himself and the Secretary to decide upon.

The dinner hour having arrived, we adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Second Month 28th, 1890.

The Guernsey Breeders' Association met Second Month 28th, 1890, at the residence of George Abbott, Moorestown, N. J. The weather was decidedly unpleasant; however, a goodly number answered at roll call. The minutes of last meeting were read and adopted.

First in the regular order of business were nominations. The following names were brought forward: John Hutchinson, Haddonfield, N. J.; William H. DuBois, Marlboro, N. J.; Edward S. Harmer, Moorestown, N. J. The rules were suspended and they were elected during the session.

W. P. Hazard reported on behalf of the delegates appointed to attend the State Board Convention, and that of the Agricultural Society at Harrisburg, Pa., that for stated reasons they did not fulfill the appointments I. W. Nicholson reported that the delegates appointed to attend the annual meeting of the New Jersey State Board of Agriculture were present. That the interest in the Board had not diminished, and that the sessions were replete with animated discussions. Silas Betts said that our delegates were called on to represent our favorite breed, and that they did good work. Good papers were read, and there was a large attendance.

The subject of tuberculosis was brought up; cases were cited where professional veterinarians had condemned valuable Channel Island cattle; they were taken to the Pennsylvania University and found to be entirely sound. Charles Williams, veterinary surgeon, was in attendance, and gave an interesting talk on the subject. He said that in some stages it was not possible to detect it with accuracy. Silas Betts stated that at one time he had fifteen Channel Island cattle over fourteen years old, and all were regular breeders. He had never lost a cow from tuberculosis.

The special meeting held on the 12th instant, at Newark, N. J., to visit the plant of the United States Butter Extractor Company, was next discussed. The chair appointed W. P. Hazard, Silas Betts and George Abbott to assist the Secretary in framing a minute embodying the sentiments of the Association. The following minute was adopted, viz: Whereas, the Guernsey Breeders' Association was invited by the United States Butter Extractor Company to witness a test of the machine at their factory in Newark, and a committee, together with the Secretary, were appointed to report the results of their observation; the said committee respectfully report:

Some of the members of the Association, together with some creamery owners, leading dairymen, etc., to the number of about thirty, visited the factory on the 12th of Second Month, 1890. Ample opportunity was afforded them by the United States Butter Extractor Company to inspect every part of the factory, all the separate parts of the machine, and finally the practical working thereof in producing butter. Sixty gallons of milk, such as is served to the

inhabitants of Newark, N. J., were placed in a Cooley vat, which was tested and found to be of about sixty-three degrees temperature Fahrenheit. This was run through the machine, running at 5,600 revolutions. The butter in a few minutes came from one tube in a beautiful granular condition, while the skim (blue) milk passed from another tube into the cans. In about fifteen minutes the entire sixty gallons had passed through, yielding twenty-three pounds and nine ounces of beautiful butter.

We therefore beg leave to report that in the judgment of your committee, the machine in this operation proved a great success, saving a large amount of trouble, and is worthy of great commendation, and the patronage of all creameries, and of those dairymen who have steam engines or other facilities of running such a machine and a sufficient supply of milk to make it pay to run it.

SILAS BETTS,
GEORGE ABBOTT, } Committee.
W. P. HAZARD,

WILLIAM B. HARVEY, Secretary.

George Abbott then read an exhaustive and ably written article on "Milk Control as Affecting the Quality and Healthfulness of the Milk Supply."

John C. Higgins and others spoke, being highly gratified with the paper. It was especially valuable because it gave a remedy for the evils. We then were invited to dinner. While enjoying the repast, the subject of ice machines and ice supply was brought up, and a meeting called afterwards where some members gave the results of their research. It appeared that none but large machines could be made to run profitably, and that the price of ice during the coming summer was likely to be a serious item.

By no means an uninteresting part of the day's program was a visit to Paulsdale Guernsey herd, owned by William M. Paul. Here we saw representative, large, well-built animals, headed by "Bonnie Boy." A fine lot of heifers, a credit to any herd, were also inspected. None could but be well impressed.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Tenth Month 17th, 1890.

The Guernsey Breeders' Association met Tenth Month 17th, 1890, at the office of George Abbott, 1823 Filbert Street, Philadelphia, mainly to discuss the advisibility of continuing the meetings of the Association. There were thirteen members in attendance.

Silas Betts reported in regard to the experiments in dairy cattle, being conducted by the New Jersey Experiment Station. He said that some of the cows had met with misfortune, but on the whole the Guernseys had done the breed great credit. He regarded the signal victory of Vice President Morton's herd at the New York State fair a great triumph for the Guernseys. Perhaps one of the fairest won awards yet made. The Secretary read a report of the tests made at the fair for butter.

The preliminary matters being disposed of, the subject of the day was entered upon by W. P. Hazard, who, deprecating the workings and influence of the Association of late, the more brought out those interested in its best welfare, and a season of interesting discussion followed. Our first speaker, who was probably as much interested as the others in seeing the meetings continued, if possible, doubted if we yielded as much benefit as in years gone by; that we have exhausted the supply of topics. Some do not care to write essays, and some members have never entertained the Club; others have spent too much on the table; he feared the expense incurred by farmers in attending the meetings.

Alexander Scott was not discouraged, though his was a very slimly attended meeting. Elwood Evans thought that our being so widely scattered made it difficult for some to go who, otherwise would be glad to attend. It either made a two day trip or a very long single day in some places.

John C. Higgins said we had had a very busy year; his cattle had done well; he thought it did much good to visit herds collectively and to criticize them; that it would be a fatal mistake to drop our meetings.

Silas Betts thought it would be a misfortune to drop the Club; he had no fault to find with those who had not entertained us, or done more for the Association. He took, he thought, the first Guernseys into New Jersey only twenty years ago, and now at every cross roads are to be seen grades and thoroughbreds; the progress has been very great. The older members wanted the younger members to take hold, the former had done a great deal of work. The Guernseys have come to stay. Channel Island cattle

lost some ground years ago, but they are gaining now, and the Guernsey will come out in the lead. He thought that while the trade was dull, it was a good time for us to build up our own herds; it was important to get good foundation animals. We might, perhaps, sometimes meet in neighborhoods where several breeders would bring their herds together and have an entertainment.

I. W. Nicholson had noticed a great improvement in the breed since he had been enrolled as a member, and thought this Association had done much of said advancement. He was opposed to having meetings at distant intervals; thought they should be held regularly and often.

S. C. Kent wanted us to continue on and do better work, and try to attend better; with so many engagements, it was hard to get all accomplished. J. C. Higgins thought we should have three winter meetings, two spring and two fall meetings; on this basis, he thought, we could sustain the Club. I. W. Nicholson thought that while milk inspectors and some veterinarians, who get their positions through influence, circulate damaging reports about the Channel Island cattle, it was well to have an association such as ours, to refute the charges.

The motion to disband as an Association was unanimously and heartily voted negatively. Silas Betts moved (and the motion was carried) that the President and Secretary, together with George Abbott, be appointed a committee to select a place for meetings, and that we convene Twelfth Month 19th.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Twelfth Month 19th, 1890.

This organization held a stated meeting on Twelfth Month 19th, 1890, at George Abbott's main office, 1823 Filbert Street, Philadelphia. There was an unusually full attendance, and the occasion was one of much interest throughout.

The minutes of the last meeting were read and adopted, and then, after roll call, the subject of membership of G. E. Gordon was taken up. Upon the representation of Silas Betts he was, upon motion, dropped from our roll for stated reasons.

John C. Higgins was appointed to prepare a paper for our next

meeting. Samuel C. Kent was requested to read an essay on "Importation of Guernsey Cattle."

It was decided to hold the next meeting Second Month 13th, 1891, and by vote the regular time for the annual meeting was changed to this date. The entertainment for the day was the disease of tuberculosis.

The subject was opened by a well written article, prepared and read by E. Mayhew Michener, V. S. After reading the article, our essayist was questioned, first by W. P. Hazard, whether the germ was vegetable ; second, whether it would communicate in blood as easily as in air ; and third, would an animal that had a sore take it more easily than a sound skinned animal. The Doctor replied that the germ was a very low organism, a ferment, somewhat resembling yeast. The blood was not an active agent for spreading disease, but that the lymphatics are; it is carried from one gland to another, arrested awhile, perhaps, in its course, but gradually passing throughout the system. In many cases it was difficult to discover, and required the attention of a good veterinarian. The Secretary asked whether bronchial troubles were not sometimes taken for tuberculosis, and was answered that they were, and that it was necessary to have a careful diagnosis taken.

It was thought by a number of members that more account was made by the veterinarians of this disease than the cases warranted, especially among Channel Island Cattle. George Abbott, with a member of the Jersey Breeders' Association, traced up a prominent report, and found that the facts as set forth could not be proven.

It was thought to be a good plan to have all our herds examined, have the results put in mathematical shape, and see just what percentage of tuberculosis did exist in herds of members of the Club. W. P. Hazard wanted a general inquiry made among all breeds, and thought it would not carry weight unless all breeds were included. He wanted it to be taken up by the State Board of Agriculture.

George Abbott offered the following resolution :

RESOLVED, That a committee be appointed to take into consideration the reports that have been circulated to the effect that Guernsey cattle in common with Jersey cattle, are peculiarly liable to tuberculosis, with power to institute an investigation by medical experts into the truth or falsity of this assertion, so far as the herds of members of this Club are concerned, with a view of determining the probable correctness of the assertion as to Channel Island cattle in general.

George Abbott, I. W. Nicholson, and Silas Betts were appointed on this committee.

The following resolution was offered by W. P. Hazard:

WHEREAS, Many statements of various kinds have been made by veterinarians and others as to the amount of tuberculosis existing among all dairy cattle ; be it

RESOLVED, That a committee be appointed by the Governor of this State, by and with the advice of the State Board of Agriculture, to examine and report as to the proportion of the cattle of this State having tuberculosis, and, if necessary, a committee of this Club be appointed to urge the matter.

The result was that committees were appointed to further both ideas, and see what would be the probable cost, and look into the practical workings of the plans.

J. S. Wilhelm stated his experience with hog cholera. Twice was his herd of one hundred animals invaded, with much loss to him. A visitor guaranteed a cure if his advice was carried out. The remedy was to give each hog about one-half pint of crude petroleum through the mouth and the rectum twice a day for three days in succession, also to disinfect the pens by thoroughly sprinkling the crude petroleum over them. The oil was immediately efficient.

Adjourned to meet at the call of the Secretary.

W. B. HARVEY, Secretary.

Minutes of Meeting held Second Month 13th, 1891.

A regular meeting of the Guernsey Breeders' Association was held Second Month 13th, 1891, at George Abbott's main office, 1823 Filbert Street, Philadelphia, there being fully an averaged number of members in attendance. The minutes of the last meeting were read and adopted. The annual election of officers of the Club for the year resulted as follows :

President, Joseph Evans, Marlton, N. J.; Vice Presidents, Elwood Evans, Marlton, N. J., and Ezra Michener, Carversville, Pa.; Secretary and Treasurer, William B. Harvey, West Grove, Pa.; Executive Committee, William I. Tomlinson, Marlton, N. J.; Mark Hughes, West Grove, Pa., and Alexander Scott, Ward, Pa.

George Abbott, on behalf of the committee appointed to look into a practical working of an investigation of tuberculosis, reported that they had not succeeded as yet in getting the desired information.

Silas Betts stated that Dr. Hunt read a valuable paper at the meeting of the New Jersey State Board of Agriculture. In this he said that from one to two per cent. of the cattle were infected with the disease, and that mainly in and near large cities, where there is poor ventilation, poor food, etc. Silas Betts also reported in regard to the test of the dairy breeds of cattle at the New Jersey Experiment Station (lately destroyed by fire.) Bulletin seventy-seven gives the results for eight months work. By the tables it is seen that of the five breeds, Jersey, Guernsey, Holstein, Ayrshire, and Short-Horn, the Guernseys come right to the front. With them solids and fats are produced more economically than in any of the other breeds, and they are not surpassed by any but the Ayrshires in economy of whole milk production, and as far as the experiments were carried out, the Guernseys went dry the shortest period of any of the breeds. This was probably the fairest and most impartial test yet made in this country ; it being the aim to show up the merits of the various breeds under the same treatment. It is a great misfortune that these valuable cows came to such an untimely end, though we can look with an air of satisfaction at the record of our favorite breed in comparison with the others when given equal chances.

The Secretary then read an interesting paper prepared by S. C. Kent, who was unable to be present, on "The Importation of Channel Island Cattle."

The merits of the Cochran and Babcock milk testers were discussed. Both machines are claiming the attention of wide awake dairymen. The Cochran method required rather more time, but the results were considered more accurate on account of the complete separation of fats. The position of the Babcock glasses after separation made the reading less sure.

Ezra Michener and David Hoke were appointed as essayists for our next meeting, to be held Fourth Month 17th.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fourth Month 17th, 1891.

The first of the summer meetings of the Guernsey Breeders' Association was held at the home of Joshua Harmer and Son, near Moorestown, N. J. There was an unusually large attendance, the progressive farmers of New Jersey outnumbering the Chester

County delegation. President Evans invited those present desiring to become members to hand in their names, and eight persons joined the Association.

S. C. Kent, of West Grove, and James James, of Guernsey, had last year imported a lot of young cattle, and now that they had grown into beauty and were coming into profit, these gentlemen intended holding a public sale of the entire herd on the same day the Association will hold its next meeting, to which everybody will be cordially welcomed. This will undoubtedly be a rare chance to pick up some very fine specimens of the pure Guernsey breed, imported and selected on the Island by one of its most noted breeders there, James James. We hope our farmers will be well represented both at the meeting and at the sale. No cattle stand so high as the Guernseys for dairy stock, and their extraordinary golden milk helps to give color and richness to that of the ordinary herd.

John Balderston showed three specimens of a dark brown, nearly black, and very lively beetle, which had destroyed about four acres of corn for him. It is rather larger than the curculio, much like that insect in shape, and has a proboscis with which it stings the young plant and cuts it to the ground. Isaac Nicholson said it usually attacked timothy, and would likely be more injurious on corn planted on timothy sod ground. It works just below the surface of the ground. There has been much complaint this season attributed to the birds. Would it not be well for our farmers to examine closely and see if the destruction is not caused mainly by this insect ?

The first regular essay was read by Edward S. Harmer, upon "Abortion." The discussion brought out the usual totally contradictory statements which farmers make from their experiences on any topic. For instance, one would allude to abortion as an epidemic, and another that it was caused by accident or damage, each being different in its effects as were the causes, one being of isolated cases and the other sweeping through the majority of the herd. One stated it might be caused by impure cotton-seed meal, especially if fed too heavily, and another stated he had fed it for years without any trouble arising from its use. The difficulty in reconciling statements directly opposite, is that many troubles are not traced accurately to the causes, and wrong reasons may be assigned. Strange dogs might chase the cows at night time, when the owner did not see them, and the fright caused would make them abort, and the farmer would think it was some other cause. Car-

bolic acid was recommended to be applied to the stalls and barns, and, diluted, to the animals.

The next essay was by Ezra Michener, upon "Phenomenal Butter Tests." He stated that he frequently got letters from parties who wanted to purchase Guernseys, preferring them on account of their larger size and rich butter appearance, but have never been able to see recorded such large tests as with Jerseys. G. W. Farlee has said, when a cow makes over three pounds of butter per day, the credit for such is fully as much due to the person handling the cow as to the cow herself. In other words, the training for this purpose is akin to the training of the trotting horse. The breeders of Jerseys are mostly wealthy men, who employ a trainer for their cattle. As much as thirty pounds of very rich food has been fed in a day, which, if done by a farmer, would kill every cow he owned in a month's time. But Guernseys have fallen chiefly into different hands; those who have to make their living from them. I have in my herd three cows that with my every day treatment will make two pounds of butter per day, that with training would make from twenty to twenty-five pounds. For him to train them would be like driving a race horse alongside of Doble, Turner, and other professionals. But he would take any of these trained Jerseys and put them alongside of his Guernseys, in his own stable, and feed all the same. He then cited the careful tests of all breeds at the New Jersey Experiment Station, where all were treated alike for a long time, and the Guernseys showed a greater per cent. of fat above the Jerseys, at a cost of 2.6 per cent. less than the Jerseys, and 7.1 per cent. less than with the Holsteins; also the average per cent. of total solids was greater than any other of the breeds tested, and the cost of producing less. Therefore they claim the Guernseys as being the best breed of dairy cattle for the common farmer as established by the evidence, and that any one who wants a butter cow for use needs the Guernsey. If he cannot get the cow he wants, a bull calf should be secured to grade up his herd to a paying basis.

The admirable essay of Ezra Michener met with a hearty response and praise from those who had long tested the Guernsey.

Edward S. Harmer gave the following statement of facts in relation to his herd of graded cows:

CREDIT 29 COWS FROM THIRD MONTH 1ST, 1890, TO THIRD MONTH 1ST, 1891.

7,543 pounds of butter at 40c.	$ 3,017 20
2,920 quarts of new milk at 4c.	116 80
20 calves sold at $5 apiece	100 00
14,800 gallons of skimmed milk	148 00
Buttermilk sold	50 00
Value of manure	145 00
	$ 3,577 00

COST OF PRODUCING ABOVE.

30 tons of hay at $10	$ 300 00
Feed, cornmeal and bran	839 80
Interest on 16 acres of pasture at $150 per acre at 6 per cent.	144 00
Depreciation of land, say	75 00
One man at $30 per month	240 00
Cream and milk bought	117 57
10 tons of straw at $8	80 00
Expenses of making and marketing butter	150 00
Profit	1,630 63
	$ 3,577 00

A yield from each cow of $123.34; a profit from each cow of $56.23.

The farm of the host is near Moorestown, N. J., and such land would bring from $200 to $235 per acre in its situation. The statement shows the quality of cows and of butter, the latter always being behind the demand at 40 cents per pound right at home. The cows are splendid specimens of grade Guernseys and Jerseys, most admirably selected, as their escutcheons and forms proved. A pure bred Guernsey bull heads the herd. The cattle are automatically watered at all hours. The tank supplies water, which is distributed in horizontal pipes, with an iron bowl to each stall. A valve prevents an overflow. It is a new device, soon saving its moderate cost, and is well worthy of being copied.

The thrifty appearance of the farm and its crops, the charming entertainment and the profitable discussions, made this meeting a noted one. A few acres are kept in such truck as potatoes and tomatoes, and yield largely. The potatoes were looking well.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 4th, 1892.

The annual meeting of the Guernsey Breeders' Association was held First Month 4th, 1892, at 1823 Filbert Street, Philadelphia. Before organizing, the members were much interested and instructed in witnessing, by representatives of the two systems, the operation of testing milk by the Cochran and Babcock methods, in the laboratory of George Abbott, where they had been invited by the Secretary. There were nineteen samples of milk presented for each to analyze and determine the percentage of butter fat, which will be reported at our next meeting, together with the result of Henry Abbott's labor on the same samples by the Adams method.

This being the annual meeting, the nomination and election of officers to serve the Association the ensuing year was now in order, which resulted as follows, and on motion the Secretary was directed to cast the ballot for the same, and they were duly elected, viz: President, Elwood Evans; Vice Presidents, Howard G. Taylor and Israel R. Scott; Secretary and Treasurer, William B. Harvey; Executive Committee, John C. Higgins, Silas Betts, and Joseph Evans.

The Secretary reported that the circular directed to be issued at our last meeting soliciting subscriptions to aid in prosecuting those selling oleomargarine, was forwarded to each member, and $65 received and paid over to the proper person to receive it, which report was accepted. John I. Carter being present, said the farmers and dairymen had raised and expended $3,500 in this work, and seem to have succeeded in driving oleo pretty well out of this market at present, and hope with the aid of State, as well as National assistance, to stamp it out entirely, although the dairy interests of this commonwealth seem to need a responsible head. George Abbott thought the proper inspection of milk in much the same condition.

John I. Carter thought the reason for classifying Guernseys where they are in the World's Fair Catalogue, was on account of numbers, they being but few compared with some other dairy breeds.

H. B. Abbott, in answering the question, how the Adams method of analyzing compared with Prof. Cochran's, said that in forty samples tested there was only a variation of one-tenth of one per cent. in total solids, and would suppose from this they would nearly agree in butter fat.

George Meloney, who represented the Babcock method, said the results of numerous tests as compared with the churn, were very close, and much more reliable unless the churning was very carefully done. He and S. Morris Jones were both of the opinion that temperature, working of butter, etc., were very essential points in obtaining accurate results from churning, especially from individual cows, and for these reasons would prefer chemical analyses.

J. C. Higgins wished to know if we had any right to assume that a cow would actually make as many pounds of butter as this instrument would indicate. The answer was, yes, and more, as the scale was graduated low to allow a margin which seemed satisfactory to the creamery men, who were using several of them. The Babcock method claimed no points of superiority over the Cochran, except in expense, quicker results, and ease of manipulation, while the latter claimed accuracy; it was thought that a number of samples could be done as quickly in one as the other. A complete machine, sufficient for a dairy of thirty or forty cows, would cost about twenty dollars, or they would do the work for ten cents per sample, where other chemists charge five dollars.

George Abbott said the Milk Exchange, to test the accuracy of the Cochran method, which had been questioned by some, had several tests made by five of the leading chemists of Philadelphia, the result of which was very satisfactory to them and gratifying to Prof. Cochran, showing accuracy in quick methods.

On motion, a vote of thanks was extended to the parties representing the two methods for their presence and untiring efforts to show forth the merits of each.

On motion adjourned.

HENRY MARSHALL, Secretary pro tem.

Minutes of Meeting held Tenth Month 7th, 1892.

The Guernsey Breeders' Association held a stated meeting Tenth Month 7th, 1892, at the home of Elwood Evans, Haddonfield, N. J. After roll call and reading of minutes of last meeting, the subject of membership was taken up. Some who are enrolled with us never attend the meetings. It was a question whether their names should be stricken from the list. The Executive Committee was left to draft a resolution in regard to the matter and present it to the Association.

Silas Betts spoke in regard to the Guernsey representation at the World's Fair. The American Guernsey Cattle Club agrees to pay the transportation both ways, employ attendants, and perhaps insure them. Breeders seem very slow to offer their stock, which is very unfortunate for the success of the enterprise, particularly as there are so few Guernseys in comparison with the other breeds, which will compete directly with them. It is to be hoped all who have really superior animals will be willing to exhibit, if for no other motive than the good of the cause.

The breed experiments at the New York Experiment Station were alluded to. The trials were exhaustive, and the Guernseys were able to hold out remarkably well, they being No. 1 in producing a pound of butter cheapest; also lowest in cost of cheese, though the Holsteins made rather more of the latter article, which fact could not but be expected.

George Abbott then gave us an interesting discourse on "Milk Sanitation," taking a number of extracts from various authorities. He thought the milk supply of the city was as important as its drug supply, and in many instances of serious illness it was even more vital. He read from a lecture by J. Wortley Axe, at the Institute of Agriculture, South Kensington, England, of cases of apthous fever. Others besides himself had used milk from an affected cow, or herd of cows, and took the fever. Sometimes it does not manifest itself for weeks. Boiling the milk is generally a remedy. Anthrax was another disease that will communicate with the human family. Instances were cited to this effect. Tuberculosis was named as being one of the most insidious of the contagions. The mammary glands are sometimes affected. Numerous cases were cited where persons were inoculated with consumption from tuberculosis.

Our speaker thought that in London more care was exercised than is the case on this side of the Atlantic. From an article by Dr. Klein, St. Bartholomew's Hospital Medical School, he read that if tuberculosis did not exist in the udder, the milk is not affected; that when boiled five minutes the germs are destroyed. It was stated that isolation of infected animals (until killed or cured), and the regular inspection of herds, was a very important course to pursue in battling with these perplexing difficulties.

The subject of sterilized milk was also brought up; but the difficulty in this process is in getting rid of the bacteria without injuring the digestibility of the milk. In France, it is the custom to heat the milk to one hundred and fifty-eight degrees, then reduce very low.

An invitation to inspect the factory of Evans and Heuling's, manufacturers of Star coolers and aerators, here ended for a season the discussion. It seemed directly in line. The place had an appearance of thrift. When informed of the large number of orders in for the machines, we had no fears of their having a surplus on their hands for a while.

After resuming our seats in the parlor, George Abbott continued his talk on "Sterilized Milk," stating that he considered it more an article to be purchased in a drug store than from a milk dealer. He had gone to no small expense during the past year in employing veterinarians to inspect about 1,100 cows whose product he handles. Of this number but three or four were found to have tuberculosis. He proposes having inspection every three or four months, also to examine stables, milk rooms, etc., as to cleanliness.

William Paul stated that he had had his cows out every day in winter, if not stormy, and his young stock was not stabled at all during that period. Elwood Evans thought fresh air was of more benefit than the exercise, and that if stables were properly ventilated the cattle need not have much exercise.

Edward Burroughs remarked regarding crimson clover, that to make it into hay required the constant use of a hay tedder. He had been to Chicago and learned that the dairy tests of the World's Fair would be accurately and minutely manipulated.

Henry I. Budd addressed the Association on the subject of traveling herds of cattle from one fair to another. He thought farmers in the vicinity should be the exhibitors, and they only.

John C. Higgins spoke in high terms of Dr. Neale, who represents his State (Delaware) in their Agricultural Experiment Station ; that he was formerly engaged in the New Jersey Agricultural Station ; that he thought tuberculosis did not exist in Channel Island, more than in any other breed of cattle.

After a day profitably spent, adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Sixth Month, 1893.

At a regular meeting of the Guernsey Breeders' Association, held at the home of William B. Harvey, Sixth Month, 1893, a large number of members and neighbors were present.

The President being absent, Henry Comfort acted for the day, and the Secretary, being host, asked to be excused; S. Morris Jones was appointed Secretary pro tem. The minutes of the preceding meeting were read and adopted. The rules were suspended and the following nominations and election of members made: M. M. Hollingsworth, Landenberg, Pa.; James P. Jackson, New London, Pa.; Frederic Jacob, West Grove, Pa.

The regular essayists not being present, Silas Best spoke of the changed sentiment among breeders in regard to tuberculosis, that they no longer feared an examination of their herds, these examinations having revealed a much better condition as regards tuberculosis than was suspected. But the public was being alarmed by scientists through exaggerated statements of its prevalence, not founded on fact, to the injury of the dairy business, and he felt it to be his duty to counteract these statements. He read from a newspaper article, in which the statement was made, that in Japan, where milk and meat are little used, tuberculosis abounded.

George Abbott never knew of tuberculosis being transmitted to man through milk, though it is true that guinea pigs and some of the lower animals will contract it, which fact is used to alarm a suspecting public. He alluded to the Philadelphia milk bills, and called attention to the discussion of them in the Philadelphia Medical Society. Several others made interesting allusions to them, and it was the general opinion that the guinea pig was an excellent medium to show the transmission of diseases, and being so susceptible to tuberculosis when inoculated for leprosy, it contracted tuberculosis.

Dr. Neale, of the Delaware State College, in answer to a question, stated that the bill passed by the Delaware Legislature, does not refer to tuberculosis in particular, but to contagious and infectious diseases in general.

John L. Balderston now read his essay on "Education for the Farmer." In treating the subject the essayist took a very broad view; he would not have us educate our children simply with the view of having them successful raisers of corn, wheat, potatoes, etc., but let it be so comprehensive that they could fill with dignity most any position to which they might be called. He happily called our attention to the former honored head of the home where we met, as an example for us all to emulate, a touching tribute to the memory of our deceased friend, T. M. Harvey. The essay was favorably commented on by many present, especially the part that related to Thomas M. Harvey.

Senator Higgins hoped that the prospect for farmers was about to brighten; he thought we would not much longer hear that wheat had touched its lowest price in Chicago. He approved of having the farmer's children well educated, but could not help but think that a good education tempted the boys to seek other occupations that appeared more remunerative.

George Abbott alluded to the improved methods of handling milk; it has been brought to a science which shows increased intelligence, as it requires this to know how to use improved appliances.

Dr. Neale said he would have to speak first of what was uppermost in his mind. He thought the dangers of tuberculosis had been treated too lightly. He knew that in his own State it was spreading for the want of proper care, indifference, and lack of authority for officials to act. He knew that the disease could be eradicated with proper care; that in both man and beast it was caused by a plant germ, and he fully believed that man would contract the disease by drinking milk or eating meat from diseased animals, though he could not mention any absolute proof that the disease had been thus transmitted. Many farmers in Delaware would not allow their herds to be examined.

Silas Betts explained that he was in full accord with any well advised effort to suppress tuberculosis and all such diseases, but that he objects to the unwarranted and exaggerated reports circulated by scientific men. He thinks there is not a single dairyman or farmer in his county in New Jersey that would not be glad to have their herds examined. He believed this was the case all over the State and in Pennsylvania, too.

Charles Wright was glad to have heard the remarks made by Dr. Neale; he thought there was a large undertone of sentiment in this meeting that would agree with and endorse them.

R. H. Hodgson thinks that any one who knows anything about tuberculosis agrees that it is contagious, and related some substantial proof. The education of the farmer should be broad.

Zebedee Haines thought great care should be taken to begin the education of our boys early, and try to inculcate an interest in all that is being done on the farm.

John C. Higgins referred touchingly to his former friend, T. M. Harvey. He apprehends we do not take our boys enough into our confidence, do not tell them and show them why we do this and why we do that, and encourage them to watch the results. Meeting adjourned until after dinner.

After a dinner, such as a good housewife knows how to prepare, the members strolled contentedly through the spacious dairy room, where cream was being raised in ice water, from milk from several neighboring herds as well as the home herd, for the Philadelphia markets; through a well furnished barn, and among a fine herd of cows grazing in a meadow of splendid pasture. The adjourned meeting was called to order.

Silas Betts gave an interesting account of the herd contests at the World's Fair. After much difficulty, twenty-five Guernseys reached Chicago from thirty-four animals that had been selected, some of them having to be left for unavoidable reasons. The Jerseys fare better, thirty-five of them reaching Chicago in good order, giving that breed a decided advantage in the contest. The only other breed there, was the Short-Horn. For quantity of milk the Jerseys were in the lead, with quality test undecided. The Short-Horns considerably behind. The Jerseys have a decided advantage with substitutes to fall back on, and having been selected from a much larger number of animals, but the Guernseys will make a very good showing. Poor hay and ensilage have been fed to some extent, it being quite difficult to get good hay.

George Abbott called attention to published reports showing that the per cent. of solids or fat in milk cannot be changed appreciably by feeding, provided the animals have been getting a moderately well balanced feed. This seemed to be a new idea to many, who were slow to think it true, but those used to testing milk were ready to accept it as a fact.

Some figures were given by Ezra Michener and Joshua Harmer, showing the results of their herds as butter producers, which was very creditable, and the average price received for butter very good.

Ezra Michener invited the Club to meet at his home early in the Eighth Month, the date to be fixed later.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eighth Month 16th, 1893.

The Guernsey Breeders' Association met Eighth Month 16th, 1893, at the home of Ezra Michener, near Carversville, Bucks County, Pa. The minutes of the preceeding meeting were read and with some alterations adopted.

William Burgess, Trenton, N. J.; Edward Horne, Pineville, Bucks County, Pa.; and John W. Sutphin, Trenton, N. J., were nominated and elected as members of the Association.

Ezra Michener stated that he thought the analyses of milk at the World's Fair showed very low percentages. He had recently had samples duplicated and tested by Marshall and Cochran and Babcock methods. The average for the twelve samples was, M and C, 4,385 per cent. fat; Babcock, 4,365 per cent fat. The average for the lot was much lower than his cows had usually yielded, by at least 01 per cent. in fat.

Silas Betts thought that the low analyses at Chicago were caused, in part at least, by the unfavorable surroundings. The buildings were exposed to the direct rays of the sun; the flies and the many visitors added to their discomfort, and consequently low yield. He thought the results were correct but remarkably low.

George Abbott asked whether the cows in the test were not recently fresh? He was answered that they were comparatively fresh, but that it was noticeable that the per cent. of the fat in the milk increased but very little as time advanced.

Charles Wright thought the cause of low tests was largely due to changing the location of the cattle.

Then again the Jersey Club had some sixty thousand cattle to select from, and a person at a high salary, and twelve months time to travel, select and train the cows. The Guernsey Club could not afford to do this, and had but a small proportion of the number from which to chose, compared with the Jerseys.

After doing full justice to the wants of the inner man, combined with congenial sociability—a feature in our Association by no means unimportant, also a suitable nooning, an adjourned session was held, when the discussion was opened by Charles Wright, Jr., "Judging Cattle at Fairs from a Practical Standpoint." He thought that if an animal was not worthy of a first premium, it should not be awarded such. In judging at fairs he held that the official must know no one; have no records; but use his senses, and judge on the merit or merits of the case before him. Acting in a private capacity, selecting a herd or choosing an animal for a friend, the case would be different.

The Guernsey shows better in a year's or a longer test; her record in a short test is apt to be beaten. This circumstance was alluded to to show, in his judgment, why the Chicago tests were so low. Upon being asked whether a herd should be judged before or after individual members thereof, he answered in effect that herds should come first.

Willis P. Hazard thought it was often hard to give honest judgment, and at the same time distribute the premiums among the exhibitors. That an exhibition should show representative animals; that the judge should have a good knowledge of the Guenon system; that the same animal should not compete for more than one premium. In judging, it may be found that a herd that has second premium has more ribbons than one getting the first. The bull is half the battle. That in many cases judging is made from appearances, while it should be for specific merit.

Fairs should employ judges that they know will act justly; that there should be but one judge, then the responsibility cannot be shirked. The judge should know no one. He sometimes likes to see an exhibitor take exception to the judgment, in order that points of merit may be drawn out. Some persons put labor on their stock, rub their horns and make their skin to glisten, while the animal may be really inferior to others possessing more good points. He differed from Charles Wright, Jr., in that he would select animals for a herd by same judgment as that made in the ring.

I. W. Nicholson insisted that a cow should be milked before judging.

Charles Wright, Jr., asked whether a cow nearly dry could be properly judged.

W. P. Hazard thought that a knowledge of the Guenon system was a great help in this particular.

Silas Betts thought it would be well to have an analyst at fairs, take samples of milk, making allowances for different conditions of pregnancy and be ruled by the results.

Then followed a discussion of feeding vs. breeding. Among the expressions voiced, George Abbott stated that he had decided that we must not ignore feeding, but pay more attention to breeding, which perhaps will cover the ground. Thomas Sharpless told of a person who thought that he could get as good results from wheat bran as any other food, but it would wear the cow out sooner, the animals feeding on their own tissues.

An examination of the "Cottage Farm" herd of Guernseys revealed numerous very creditable animals indeed. Some young cows were particularly to be admired, as well as the bull, Pamlico, No. 2580, which heads the herd. The produce in the shape of butter is sold in Philadelphia the year round, at good prices.

Thus, after a day pleasantly spent, we departed to our respective homes.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 23rd, 1894.

The annual meeting of The Guernsey Breeders' Association for the election of officers for the current year and other business, was held in Grangers' Hall, Haddonfield, N. J., First Month 23rd, 1894.

In order to have a lecture from Ex-Governor Hoard, Wisconsin, the time of the annual meeting as fixed by the constitution was changed for this year. The minutes of the previous meeting were read and adopted, after which an election of officers was held, resulting as follows: President, Henry Marshall; Vice-Presidents, Thomas Sharpless and Henry W. Comfort; Secretary and Treasurer, William B. Harvey; Executive Committee, Silas Betts, Charles Wright, Jr., and Mark Hughes. New members were elected as follows: Henry R. Higgins, Delaware City, Del.; R. T. Ridgway, Cream Ridge, N. J.; and Charles Howell Cook, Trenton, N. J.

As delegates to the annual meeting of the Pennsylvania State Board of Agriculture to be held in Harrisburg 24th and 25th insts., Henry Marshall, George Abbott, William B. Harvey, Henry W. Comfort, and William G. Powell were appointed.

George Abbott suggested that as an Association we express our opinion regarding the subjects to be discussed at the Harrisburg meeting, and the following was adopted and directed to be forwarded together with the credentials of the delegates:

WHEREAS, Recent investigation has demonstrated that tuberculosis is in a degree present amongst our dairy cattle, and recognizing that its extermination is of great importance to the dairy interests of the State, therefore

RESOLVED, That we favor the enactment of such legislation as will provide for the eradication of this disease, and believe that the authority and power for action in the case should be vested with the Secretary of the State Board of Agriculture in conjunction with the Governor of our State, in manner as is now provided for the suppression of the disease known as pleuro-pneumonia.

The following were appointed to assist the Secretary in soliciting subscriptions to "Hoards Dairyman," (the remuneration asked by the Governor for his lecture) the balance to be paid by the Treasurer, viz: Charles Wright, Jr., John C. Higgins, Joseph Evans, and Henry W. Comfort; they were requested to report at next meeting.

After partaking of a substantial lunch furnished by kind friends, the lecturer was introduced to quite a large audience, members and those interested in dairy matters.

In substance the Governor said, that in breeding thoroughbreds, we have not the evils to contend with as in scrubs, but have to contend with temperaments. Cattle have special shapes for particular purposes. On making over three thousand special studies on a special point, the more he studies, the more he finds to learn. When he had dogs of speed temperament they had a peculiar agreement of form and character; horses, bred for speed, had a certain form, a peculiar spine; the game cock had peculiar agreement of form development in strong physique—thus proving true the old Arab saying "Form was everything to purpose." In almost all cases men followed their various vocations according to their general make-up; persons having certain forms developing them for certain attainments. It is comparatively easy to learn to be a lawyer or a banker, or some trade governed by some fixed rules, but to study the characteristics of nature and its laws is something more hidden and difficult. It is not right to put a man of a certain build at work for which he is not by nature adapted. If a boy wants to stay on a farm, very good; but if he is fitted for something else, by all means let him go.

"Brain of the farm is the parent brain of the nation." "Temperament decides function and function decides form." Breed inside of temperament and not outside of it. The dog man and the horse man bear this effectively in mind, but with the cow man there are a lot of ill defined notions. Just as soon as farmers breed in proper line there will be a greater demand for his cows than at present.

One great item of expense to the average dairyman is not attended to sufficiently, so much effort is wasted, so much food spent for naught. Our effort should be, generally speaking, to increase the maternity of the stock, to cause the daughter to possess it to a greater degree than her mother, and when such is the case nature is apt to do it at the expense of breeding capacity

A crayon portrait of a Hereford steer was shown; this fellow was a miser, he keeps fat; fashion different, and function also; very different from the Channel Island cow, and must be treated accordingly, else there will be loss.

To go back to breeds we come to individuality. It is hard to deduct a law; to give a certain amount of feed and get a certain result. We put grains of corn in the ground, one grain will bring strong, healthy stock and produce well, while from another will result a barren stalk. The lecturer preferred a good strong stalk rather than a good ear. The stalk that bears an ear is of different

character from that bearing none. In planting for silo do not plant so thickly that the plants will not bear ears, for in ear bearing the question of maternity comes in, the ear brings the better part; then cut when the ear is at the pinnacle of nutrition.

He thought we should study our cows better, use better care in stabling, etc. In some places people are giving especial care, and are reaping the benefits therefrom. He does not think a dairy cow more subject to disease than other objects of maternity.

Cows must have plenty of air; some persons think they must have a large number of them in a small space: milk is apt to be poisoned. In some places the cows are kept over the manure, on the plea that it is convenient, but it wastes cow. He hoped to see the time when stables would be heated artificially rather than by animal heat. Sun light is of great advantage to animals. Tuberculosis is often caused by keeping them in close stables.

Regarding constitution, he thought the knife had not been used enough; there was too much trash. We need constitution in our dairy cows, not the same as in dogs, or the game cock, nor that bearing exposure or abuse. That which we call prepotency, power which lies behind, is of great importance. We should keep bulls of two different families. A vicious bull or stallion is apt to produce the best progeny, and to hurt their temper is a disadvantage.

The practice of dehorning was one for which no one had proven the benefit. In one way it was an advantage, but to dehorn thoroughbreds detracts from the stamina; it is all right for steers. In English hunting clubs, horses' tails were docked. Instead of leaping a five rail fence, as had been their custom, they gradually dropped to four rail, and their owners had enough sense to stop the practice.

An instance was given where a remarkably ferocious stallion showed until his fifth year, colts of great speed; he fell into the hands of a brutish man, who either would break the temper or the neck of the animal; he succeeded in the former; although his shape was all right, he never had a speedy colt afterwards.

Elwood Evans wanted to know what to do with wicked bulls, and he was answered that the presence of cows was quieting; a tread power was also excellent, and they seemed to enjoy it. Silas Betts thought it was not so much the bull as the man; if man had rather more courage than bull, he was all right.

As a means to have good square udders in cows, have bulls with good width of teats front and back. For constitution, rather coarse hair is desirable. In observing 3000 or more cases for con-

stitution, great importance is attached to navel, which should have large development. Constitution is what the dam imparts to her offspring.

The function of a dairy cow is to consume a large amount of food, and produce a correspondingly large amount of milk year after year, and to do this successfully is hard on her; if her navel is well developed she is better able to withstand the strain, being large, implies that more nutrition passes to the fœtus during development. In battle, a soldier, though his lungs be ever so good, if he possess weak umbilical development, he cannot begin to stand fatigue with the man where the latter is strong.

After some further discussion, adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fourth Month 24th, 1894.

A stated meeting of the Guernsey Breeders' Association was held at the Colonnade Hotel, Philadelphia, Fourth Month 24th, 1894. The minutes of last meeting were read, and with a slight alteration adopted.

George Abbott, on behalf of the committee appointed to confer with the Secretary of the State Board of Health of Pennsylvania, stated that they were not ready to report, and they were continued.

Paul T. Norton was nominated a member of the Association; the by-laws were suspended, and he was elected a member.

The committee appointed to audit the Treasurer's account reported that they found it correct, there being a balance in favor of the Association of $121.27.

Dr. G. A. Bowen, of Woodstock, Conn., was the lecturer for the day, his subject being, "Heredity the Prime Factor in Dairying," treating of pedigree and breeding for results. The Doctor stated in substance that any business concerned in improving the food supply will never see the bottom go out of it. Such a business is dairying. Years ago wheat was not grown further west than Rochester, in New York. The belt gradually advanced towards the setting sun, until now the Pacific slope is the wheat country. As wheat growing grows westward, dairying takes its place. We should breed with an assurance of certainty. In dairy cows one good part

suggests another. Such an animal is entirely different from one of the beef type ; she is far removed from the original cow. The different breeds have their peculiarities. We find that wherever they exist, heredity forms an important part ; the further back we go the more interesting we find it. Life is a wonderful thing. We do not start at improving an animal with birth, but with the first atom of existence. There will be better and increasingly superior herds ; not cows averaging one hundred and twenty-five pounds of butter yearly, but with four hundred pound records.

Taking up the laws that govern the breeder, the lecturer illustrated his ideas by means of charts: First, law of heredity. Like produces like, and certain qualities of parents will be found in offspring. By inbreeding certain peculiarities we can increase the points. In dogs these are wonderfully distinct. He had a six weeks' Collie pup sit on a bunch of fodder and keep cows away from it until his master came.

Second law, variation. If there was no power to change, a cow would be a cow and a horse a horse, without any chance of improvement, but there is variation. A Jew is always a Jew, but we recognize individual differences, and such is the case in the brute creation.

Third law, atavism. Animals do take back to their ancestors; they may take to one or the other parent, or to a grand-parent.

Fourth law, environment, has its due influence in bringing out results.

Fifth law, nicking. In other words, getting the right animals together to produce the desired results.

In the mind of the doctor, no bovine is more majestic than the Shorthorn. If we breed two Shorthorns together, we get Shorthorn, if two Ayrshires, we get Ayrshire, but breed Shorthorn and Ayrshire and see what a change. Nature has a struggle ; the wedgeshaped body, fine head of the latter, against the massive form of the other, and we have as a result of the cross, a changed animal, influenced by the laws of heredity. One important point in mixed breeding is the changing. Which parent is the calf going to resemble ? It is impossible to tell, but most likely it will typify the poorer of the two.

A sketch was shown of a Jersey cow sixteen years old that had yielded over sixteen pounds of butter per week, also a Shorthorn bull. In breeding these together what will be the result ? Some people try to do this very thing to secure good general purpose cow, but this is impossible ; she will not be a success.

Other charts illustrated pedigrees of famous animals, both horses and cows, where by judicious inbreeding of performing animals, great results were attained. On an elaborate chart was exhibited the origin of the English nation showing the pedigree of the ruling families, the result being a race before whom all other powers have succumbed wherever she has planted her foot.

The doctor thought that by care and thorough understanding of the principles of breeding, we, as breeders, would increase our reputation as such, as business men, and what is an important feature, our pocket books, and that the day of good records has by no means been reached.

Silas Betts asked for the difference between heredity and environment.

If we get the best we can find, use the purest and best feed and water, and have good surroundings, this environment will produce its beneficial results, an opposite condition will show a decidedly changed state of affairs.

Silas Betts speaking of fancy points, remarked that he thought a Jersey cow with a light nose making five hundred pounds of butter per year, or a Guernsey cow with dark nose, would alike bring long prices.

John C. Higgins bore strongly on this point; he thought we ought to take a stand, that there should be no distinction between light and dark.

This sentiment was warmly supported by the members of the Association. It should be borne in mind that in breeding dairy stock we should breed for merit.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Sixth Month 8th, 1894.

The Guernsey Breeders' Association met Sixth Month 8th, 1894, at the home of Henry W. Comfort, near Fallsington, Pa. The minutes of last meeting were read and adopted. The following were nominated for membership in the Association: J. H. Darrah, Trenton, N. J.; George McGuire, Trenton, N. J.; John M. Lippincott, Moorestown, N. J., and Isaac L. Roberts, Moorestown, N. J. The by-laws were suspended and they elected.

George Abbott, on behalf of the committee appointed to see

Dr. Lee, Secretary of the State Board of Health, reported that they were kindly received; they found the doctor very willing to know the truth; he seemed to think that Channel Island cattle were more housed than other breeds, and more susceptible to tuberculosis. The report of the committee was accepted, and they continued.

John C. Higgins read a report from the Iowa Experiment Station, of a twenty-one days' test of sugar, feed cob-meal, etc., showing conclusively that feed does effect the fat in dairy cows, as opposed to the theory that a cow has a capacity beyond which she cannot go. Sugar meal made a particularly high percentage of fat.

It was suggested that a premium be offered to breeders to induce them to breed and feed for high tests. There seems to be no end of records for Jerseys and Holsteins, but a veritable dearth of Guernsey tests. The advancement of the breed demands more thorough and systematic testing. The subject was not discussed at length, and will be left for a future meeting. The host gave an interesting report of his herd, showing the practical working of his cows; different breeds; a synopsis is as follows:

No. of Guernseys	Average age	Average mo. milked	Specific gravity	Fat	Solids not fat	Totals	Average lbs. yield
6	1st calf	5	31.5	4.80	8 83	13.63	16
5	2nd "	5	31.7	5.10	8.88	13 98	19
5	cows	7	31.2	5.30	8 90	14.20	17
Holsteins.							
4	1st calf	7	30.3	3.15	8.23	11 38	20
2	2nd "	5½	31.5	4.10	8.65	12 75	23
5	cows	4½	29.	3.	7.90	10.90	30

Sixteen Guernseys milked 5⅝ months, giving an average of eighteen pounds milk daily of 5.05 per cent. butter fat, or 9–10 pounds butter fat per cow. Eleven Holsteins milking 5–6–11 months, were giving an average of twenty-five pounds daily of 3.25 per cent. butter fat, or 81–100 pounds butter per cow.

Silas Betts read an article from the "Arena" on heredity and environment.

After an animated discussion on various subjects, the Association adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Tenth Month 26th, 1894.

The Guernsey Breeders' Association met Tenth Month 26th, 1894, at Colonnade Hotel, Philadelphia. The minutes of the previous meeting were read and adopted. Lee S. Clymer, Riegelsville, Pa.; Levi B. Risden, Trenton, N. J.; and Harry Carter, Chatham, Pa., were nominated as members; the by-laws were suspended and they elected.

The meeting was called, largely to consider the propositions brought by the Executive Committee regarding a series of competitive tests to be organized under the auspices of the Association. The members present entered heartily into the discussion of the project, and united very generally on the lines proposed by the committee; some suggestions were made which were embodied in the paper adopted by the Association. It was voted to send copies of the circular to the "Country Gentleman" and "Hoard's Dairyman;" also to send one to each member of this Association, and to the members of the American Guernsey Cattle Club.

RULES GOVERNING THE TEST.

The samples must be secured for one day of each week, care being exercised to have these (which should be taken as soon as milked) well mixed.

The cows must be milked out clean and at regular hours, morning and evening, and equal samples taken from the entire product of the two milkings, properly cooled and delivered to Marshall and Cochran, chemists, 315 North Fifth Street, Philadelphia, in condition satisfactory to them. The bottles must be full to prevent churning.

All expenses connected with the tests to be paid by the contestants. If any test appears phenomenally high, or, if for any reason the Executive Committee sees fit, they, or any one whom they may deputize, are at liberty to visit the dairies and take samples for themselves during the period of testing.

Postal cards will be furnished all members making tests, on which will be blank forms to be filled and sent monthly to the Secretary; this data to be formulated and given out at our meetings from time to time.

The testing will commence Twelfth Month (December) 1st, 1894, and persons cannot enter for the first year later than Fourth Month (April) 1st, 1895. Report on first year's tests to be made Fourth Month 1st, 1896. Any one wishing to start in advance of

above date may do so by notifying the Secretary and complying with these rules. Any one desiring to enter contest between Fourth Month 1st, 1895, and Fourth Month 1st, 1896, may do so; said tests to be counted in the second year, which will end Fourth Month 1st, 1897, as it is determined to carry on the work for at least two years. The contest is for individual tests and for largest yield of butter fat in a year. The yearly awards will be as follows: First prize, $100; second prize, $50; Third prize, $25.

One hundred dollars of this amount to be assumed by the Association, the balance of yearly awards to be raised by contribution. Competitors may enter more than one cow if desired, keeping records individually. Members of the Guernsey Breeders' Association only are at liberty to compete for the prizes. All animals competing must be registered in the American Guernsey Cattle Club.

The Association will be glad to enroll as members other breeders. Terms of admission will be furnished by the Secretary on application. All persons wishing to compete will please apply to the Secretary for blanks as early as possible. It is desired that this effort will be fruitful of lasting results, and breeders are urged to take hold in earnest in behalf of the good work.

W. B. HARVEY, Secretary.

West Grove, Pa., Eleventh Month 1st, 1894.

Dr. A. T. Neale was advertised to speak on "Foods and Food Values," but he was not present.

It was voted that the Association should be at the expense of a lunch at the Colonnade Hotel at its next annual meeting for its members and guests.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 28th, 1895.

An annual meeting of the Guernsey Breeders' Association was held First Month 28th, 1895, at the Colonnade Hotel, Philadelphia. The attendance was large and discussions were lively and to the point. After reading minutes of last meeting and roll call, the election of officers for 1895 was entered upon, resulting as follows:— President, Henry W. Comfort, Fallsington, Pa.; Vice Presidents,

Charles Wright, Jr., Columbus, N. J., and Thomas Sharpless, West Chester, Pa.; Secretary and Treasurer, William B. Harvey, West Grove, Pa.; Executive Committee, John C. Higgins, Delaware City, Del.; Mark Hughes, West Grove, Pa., and Silas Betts, Camden, N. J.

New members were nominated as follows:—D. P. Forney, Hanover, Pa.; E. B. Staggers, Jr., Newark, Del.; Dr. W. L. Zuill, 857 North Broad Street, Philadelphia; J. L. Branson, 506 St. John Street, Philadelphia; Charles A. Lippincott, Moorestown, N. J.; Samuel Wood, Haddonfield, N. J. The by-laws were suspended and they elected members of the Association. On motion, the resignation of C. S. Carter was accepted.

The Secretary reported that only one member had as yet been sending in reports of tests under the rules recently adopted for a breed contest for greatest yield of butter fats in a year; others, it appears, are likely to enter soon.

Realizing the importance of legislation on the subject of tuberculosis, and knowing that a law was about to be passed by the Pennsylvania Legislature, the matter was presented for discussion, and the following resolution was adopted:

WHEREAS, Being aware of the importance of the passage of a suitable law in the Pennsylvania Legislature on the suppression of tuberculosis among domestic animals,

RESOLVED, that we fully endorse House bill No. 24 offered by the State Board of Agriculture, and urge its being made a law, though we would accept an amendment, appointing an Executive Board, composed of the Governor, Secretary of State Board of Agriculture, and Dairy and Food Commissioner.

Joseph Matlack and Edward S. Harmer were appointed to audit the accounts of the Treasurer, and reported them correct, there being a balance due the Association of $105.44.

A new feature in the entertainment was the generosity of the Association in giving its members and guests a substantial lunch in the hotel; this added greatly to the social enjoyment of the occasion, there being in this body a peculiar freedom and good feeling; then it cannot be denied, a man has a most kindly regard for a good repast.

"Dairying of the Past, Present and Future," was advertised as a topic for discussion. Silas Betts gave us a lively extempore address on the subject, stating that the early dairies were composed of but few cows, and generally far away from the cities. Methods were crude, and the product, as might be expected, was far from first-class; this applied both to breeding and products therefrom.

The demand for quantity came first, then persons in the higher ranks demanded quality. Far back in 1840, the Biddles and others in Philadelphia, desiring to improve their breeding stock, Channel Island cattle were imported from Guernsey and Jersey; the first importations of the former breed were about that time. The crossing of these intense butter strains with common stock made a marked difference in the butter producing animals. Improved methods of manipulation secured better butter, which made a market, until now dairying is one of the most important agricultural industries of the country, and the Guernsey as a dairy cow was never so popular as to-day; the demand is good and prices are being maintained better than any of the other breeds, partly on account of their scarcity. By intelligent breeding only can we hope to improve; artificial breeding is by care and selection; selection and rejection, which must begin at the bottom, not at the top. Animals must possess ability to do well in their environment; if this is bad, weak constitutions will show to disadvantage. Inspectors should be sent out to examine herds as to sanitation.

Offspring will inherit qualities from parents; influence in heredity will be in proportion to distance from parent. By breeding to a common form for a series of years, a fixed heredity will be the result. Cross breeding makes variety; this can be accomplished by different families of one breed possessing distinctively different traits. When a desirable quality is found, we should breed close to it to make it permanent; by continual crossing we cannot secure a fixed quality.

The speaker thought tuberculosis was brought about by the confinement in close, illy ventilated stables, and was averse to the use of tuberculin in herds, as it is employed by many. Dr. Zuill, who was chairman of a committee of the University of Pennsylvania, to experiment with the imported lymph when first introduced, thought that the veterinarians were too strong on the theory of tuberculin, and that we should not place unbounded confidence in it. It does not always give reaction, and sometimes gives it when the disease is not present.

Very few animals in our herds have tubercular mammetis, and milk containing tubercular germs to the extent of one part to fifty, is entirely harmless. Tuberculin injected into healthy cows is a serious experiment. He cited cases in the human family, persons whom he had known, who used Koch's lymph, and who would have, to all appearances, lived for years, but died in three months time from its effects. He thought an animal that did not show the disease by oscultation was not dangerous.

The old countries of Europe do not force the use of the lymph. It will cause reaction for other inflammatory troubles; unless the tuberculin is entirely devoid of spores, it will cause disease, and he was not certain that 212 degrees Fahrenheit would kill them, and cited cases which really proved the opposite; also explained the manufacture of the material. He thought it was proper to use the lymph in suspicious cases, this perhaps being its proper sphere.

Silas Betts thought farmers would welcome a veterinarian on these grounds, and that no breeder would object to such.

Other discussion followed on the same subject, after which followed adjournment, to meet again at the call of the Secretary.

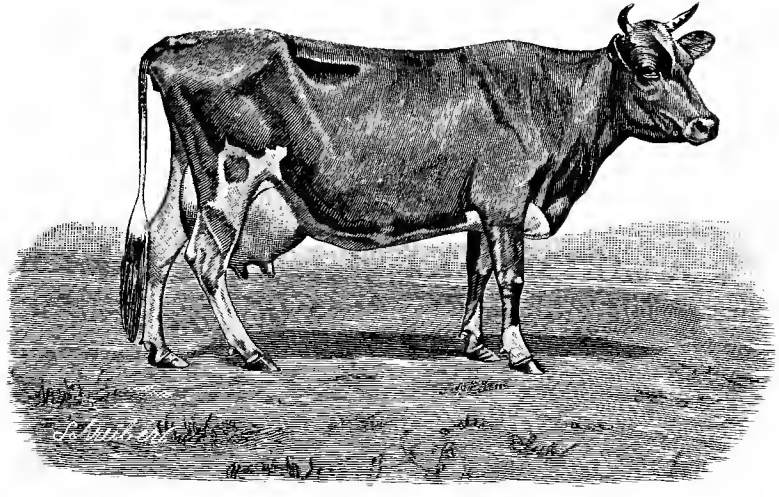
WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Sixth Month 11th, 1895.

The meeting of the Guernsey Breeders' Association at the home of Henry Palmer, Avondale, Sixth Month 11th, 1895, was an interesting occasion. Breeders and admirers of the breed from many points, numbering about sixty persons, were present. The minutes of the last meeting were read and adopted. S. F. Houston, of Philadelphia; Edgar T. Haines of West Grove, Pa.; and Dr. M. E. Conard, of West Grove, Pa., were elected members of the Association. William H. Caldwell, Secretary of the American Guernsey Cattle Club, was elected an honorary member.

As our membership has grown so large it was thought best for us to broaden our field of labor, and discuss subjects bearing on agriculture in general. This would embrace cultivation of all food products and kindred topics, for the stock, and market at large, our aim being to enlighten the mind and simplify methods by which the breeder and farmer may enjoy his calling, and by which he may be enabled to reap remunerative prices for what he raises.

Our host gave us in brief his experience in the cultivation of rape as a sheep food. It is of the cabbage family. In six weeks after sowing, it was two feet or more high, and made excellent pasture, making a rich, substantial food. In drilling, from one to two pounds of seed per acre were required; broadcast from two to four pounds. It would make good cow food, he thought, but would be apt to make a strong taste to the milk.



LADY EMILY FOLEY 2ND, No. 1700.

The chief topic for discussion was "The Relation of Experiment Station Work to the Interests of the Stock Raiser." Secretary Caldwell, of the American Guernsey Cattle Club, treated the subject in an able manner. First, tracing the development of agriculture, it was interesting to see how the spirit of specialization was ever apparent, and how the successive stages through which the calling had passed, had led to the present condition, which demands persons thoroughly educated, and with an intelligent understanding of economic business principles.

Many foreign nations have for years given government aid to agriculture by the founding and maintaining of agricultural schools and experiment stations. A few of our States, notably Massachusetts, Connecticut, New Jersey, New York and Pennsylvania, years ago caught the impulse of the work so well established in Europe. To-day American investigators look with respect upon the name of Goessman, Cook, Johnson, Pugh and their associates. The work of these men, backed by their own States, had a great influence in making our government realize the importance of the development of agricultural pursuits and the influence thereof to the welfare of the nation. This led to the Hatch act of 1887, establishing in each State an agricultural experiment station at each of the agricultural colleges, established by the Morrill act of 1863. There are now fifty-five experiment stations, and the amount the government gives for their support is about $705,000 a year. This is said to be a much larger aggregate expenditure for this purpose than has been made by any other nation. It involves the use of only thirty cents for every $1000 of our annual agricultural product in an attempt to improve the quality and quantity of that product.

The speaker then traced the lines of work undertaken by the stations, the personnel of the workers, and then spoke of the desire among breeders for a thorough study of the construction and management of stables, securing ventilation, sunlight, and all the environments conducive to health. A trial of different methods, or a report of them in practical operation at different breeding establishments, would be of much value. From a breeder's standpoint a study of these questions seems to have been thrown upon the station by the great interest and study they have made of the one disease, tuberculosis. As stock breeders we have much to be thankful for in the existence of the experiment stations. We have much to expect from them, and to confidently feel that most of them are working for us as best they can. Think of the Babcock test and its application. That one thing alone will compensate for much

expense. Can Guernsey breeders but admire the straightforward work done at the New York and New Jersey Experiment Stations, showing the Guernsey to be the most economical butter producer? Yes, and we can thank some of the members representing the experiment stations on the committee in charge of the World's Fair dairy tests that things there went as smoothly as they did. Their calm, quiet, systematic, scientific manner was a puzzle, and prevented much scheming.

The experiment stations are continually offering assistance to the breeders' organizations in conducting tests of cows. At the present time, this seems to be wherein they can be of the greatest service. Work done by them is received with greater weight than if done by others.

Attention was called by the speaker to the circular issued by Dr. Armsby, of the Pennsylvania Experiment Station, and to a similar one from Cornell Experiment Station. He pointed out the condition of such co-operative tests as containing nothing objectionable, simply carrying in a modified manner the details always surrounding the work at the stations. In other words, the station will give the time of one of their staff, the use of all apparatus and supplies for the carrying out of the work, charging only for the actual traveling and living expenses of the representative while conducting the work.

George Abbott thought the experiment stations were most valuable institutions, that many persons regarded private experiments as biased, but in the station work, the results are almost universally accepted as authoritative and final. He had received a bulletin a few days before showing that fat could not be fed into milk; Danish and other authority tended to the same conclusion, but our people could not accept the new theory, but are now coming to see the truth of the assertion.

Dr. Conard thought that in many cases, farmers needed more information on medical matters; he cited a case where a person had allowed cows to lick nitrade of soda; the result was much the same as in arsenic poison.

Secretary Caldwell thought that in large doses the nitrade acted as a heart stimulant, and in small doses death resulted, and that death would result from heart disease, not poison.

After a bounteous repast, and an afternoon session, devoted to miscellanous discussion, an inspection ot the spacious buildings and of some hundreds of imported and home-raised Dorset-horn sheep was in order, a pretty sight, indeed. Our host makes a specialty

of breeding them, and has been very successful thereat, early lambs for the holiday market being an important item.

After some time devoted to social chat, the company dispersed.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eleventh Month 27th, 1895.

The Guernsey Breeders' Association met Eleventh Month 27th, 1895, at the Colonnade Hotel, Philadelphia. After roll call, the minutes of last meeting were read and adopted.

The Secretary gave a synopsis of the yearly tests being conducted under the auspices of the Association; results showed that numerous very good cows had been entered, though it was to be regretted that one prominent breeder had withdrawn from competition. While recognizing the superior quality of the cows in the test, it was fully expected that there would have been a more generous response to the liberal rewards offered; there is yet ample time to enter for the second year's contest. It was voted that the Executive Committee be authorized to engage a lecturer for our next meeting.

A number of suggestions were made relative to a topic for discussion. High priced fancy cheese, which we as a nation purchase from abroad, and at a large outlay of money, was one subject which it was thought should claim our attention.

Some of the members who had just returned from the exhibition of the Live Stock Society of America, at Madison Square, New York City, were called upon to express their opinions regarding it. All testified to the grand exhibition of our favorite breed; it surely eclipsed any other of the bovines displayed. Numerous persons of ample means have pinned their faith to the Guernsey type, and are sparing no pains or money in their effort to secure the best that can be bought. This healthy rivalry has by no means an injurious effect on the breed throughout the country, and to-day the demand is almost greater than the supply.

The sheep and swine exhibits were very creditable, and on the whole, judging from visitors' standpoint, the show was a success, though the coffers of the society were not overtaxed with the one dollar admission fee during the early part of the week.

John C. Higgins was then called upon to address the Associa-

tion on the feeding problem, continued from last meeting; he was strong in praising the pea vine in making a balanced ration for feeding; it can grow well on poor soil, and makes a great amount of food on strong land. One difficulty with the plants rich in albuminoids, is the fact that they do not keep well in silos. The Robertson mixture for ensilage, formulated by J. W. Robertson, of Central Experiment Farm, Ottawa, Canada, was thought to be a decided success. This combination is composed of Indian corn, horse beans, and sun-flower heads. The statistics of a crop grown at the Ottawa Experiment Farm, with analysis, are:

	Albuminoids, lbs.	Carbohydrates, lbs.	Fat lbs.
Indian corn, 2 acres, say 30 tons .	1,092	10,302	324
Horse beans, 1 acre, say 8 tons . .	435	1,210	111
Sun-flower heads ½ acre, say 3¾ tons .	176	1,186	364
Total, 3½ acres, say 41¾ tons .	1,703	12,698	799

In the eastern provinces the corn and beans are mixed together and planted in rows three feet apart, with two to four grains per lineal foot. In the upper provinces, and probably in the greater part of the United States, the corn and beans are to be planted separate. The preparation for each crop is to be the same, and they may also be planted at or about the same time. The beans are to be planted in rows three feet apart, and from three to six grains per lineal foot of row. The corn of course will be planted thinner, say from two to three grains per lineal foot of row. The sun-flowers are to be planted moderately early in the spring, in rows three feet apart, and one plant allowed to grow in each foot of row. The heads only are put in the silo. A fair distribution of the mixture can be made at the time of filling the silo. No difficulty is experienced in this way. A man in the silo distributes the mixture as fast as it leaves the elevator. The cutter is set to cut the corn, beans and sun-flower heads from one-half to three-quarters of an inch in length. The Robertson ensilage mixture is to be fed with four pounds less grain or meal per fifty pounds than with ordinary indian corn ensilage. Prof. Robertson thinks that ordinarily it does not pay to feed more than six pounds rich meal to dairy cows; then two pounds meal would be ample to feed with the Robertson ensilage, and with ordinary cattle no grain is required to feed with it. A wonderful saving and a more wonderful discovery.

The speaker stated that the horse bean could not be grown further south than northern New Jersey. The "Soja" bean does

not make much forage, the leaf being narrow ; it is rich in albumenoids, and does not run, stands up and branches.

In a feeding trial made by the Delaware Experiment Station, covering over three months time, it was clearly shown that pea-vine silage was a perfect substitute for bran in a balanced ration, other parts of the ration being the same. The black seeded pea was named as being the best variety for us to plant. Our speaker showed his loyalty to corn, however, in admitting it as king of American plants, as we are never disappointed entirely in this noble soil product.

Crimson clover was mentioned as an economical forage plant, as well as fertilizer. John L. Balderston thought in planting corn, on this crop, ploughed under, something should be used as a starter for the corn ; the clover being really a disadvantage while the plants are young, particularly if the weather is dry, the ground being in a porous condition, the young plants are unable to assimilate the nutrition from the clover until they attain a large size.

Silas Betts thought it would be well for all the members who could, to experiment on the various economic food plants, and report from time to time their experience. He had sowed in the fall, six bushels of Virginia winter oats, and intends to inform us regarding the success of the trial.

H. W. Comfort told of a person who put about six inches of bran on top of his ensilage in the pit when filled ; when he came to use the silage the bran was not spoiled. This seemed strange, and is well worth a trial.

It was decided to take lunch at the hotel at our next (the annual meeting) and at individual expense.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 27th, 1896.

The Annual meeting of the Guernsey Breeders' Association was held First Month 27th, 1896, at Colonnade Hotel, Philadelphia. Minutes of last meeting were read and approved. J. M. Lippincott and J. L. Harmer were appointed by the President to audit the accounts of the Treasurer ; they found a balance due the Association of $133.55.

The nomination and election of officers for the year 1896 was then taken up. Nominations were as follows : President, Charles

Wright, Jr.; Vice Presidents, Edward S. Harmer and Joseph Evans ; Secretary and Treasurer, William B. Harvey ; Executive Committee, Silas Betts, John I. Carter and John C. Higgins. These persons were duly elected for the various offices. Silas Betts and Ezra Michener were appointed to conduct the new President to the chair.

Ezra Michener proposed that the results of the butter fat contest, as reported by Marshall and Cochran, be submitted to the authorities at the Pennsylvania State Experiment Station, requesting them to decide in regard to the awards. He was appointed to make inquiry and report at next meeting.

S. H. Gardiner, Ashland, N. J., and C. Canby Balderston, Colora, Md., were elected members of the Association.

Dr. A. T. Neale, Director of the Delaware College and Experiment Station, was then introduced, and favored us with a very nstructive talk on Anthrax. He stated that Dr. Hunt had found it in New Jersey in 1882, and he (Dr. Neale) found it in Salem and Cumberland Counties, of the same State. In 1895 he visited New Jersey and found that ninety-four farmers had suffered from its ravages ; about thirty per cent. of the cases proved fatal ; thirty-three per cent of the mules suffered, and ten per cent. of the horses. In 1892 there was an outbreak in New Castle County, Del., limited to ten farms—fifty cows and horses died. A local quarantine was established, and the disease stopped. In the summer of 1895, sixteen farms in New Castle County, Del., were affected. In 1889–90 the mules on the low lands in Mississippi had the dreaded malady ; it was claimed that it was a European disease, semi-barbarous ; whatever the origin was, we had it, and must recognize the fact. The symptoms are that the animal is mostly found dead, much swollen ; blood runs from the mouth and annus. In anthrax the blood is black and will not coagulate readily when exposed to the air ; they die suddenly and possess a peculiar odor. In making virus to combat the disease, the Doctor took a piece of the ear and secured a little blood, and a culture of the disease was effected. A glass of 1,200 diameters can easily detect them ; lines or rods, 6,000 of them being required to make an inch. A single drop of blood will make enough culture to kill hundreds of animals.

At the Delaware station, they had treated healthy animals with the virus, and they died in sixty hours. The great trouble in this disease is that it not only kills the stock, but it kills the land. It can grow in ground as well as in animals, and when once introduced, it is hard to tell when it will be safe to put a healthy animal on the premises. There are various means of spreading the disease.

A peculiar case came to the Doctor's notice in Maryland. A farmer with high lying ground had a horse to die, the trouble was unmistakably anthrax. The water used came from springs on the premises, no new stock had been introduced for seven or eight years ; the case was a puzzle. Finally it was found that the horse in question, attached to a roller, followed a grain drill which was sowing bone dust with the wheat. Investigation showed that this raw bone came from South America, which is a fruitful field of the trouble. There is a moral here for us all, to beware of the source of our raw bone used for fertilizer.

Persons who work on South American goat skins, and at bristles in making brushes, have frequently been affected, though in the human family only a small percentage of fatalities result. It has been found out that a certain small percentage of the virus injected under the skin will cause the disease in a mild form, and inoculate against a more serious attack.

In France, Pasteur, who among many other great services for the people, had saved the silk industry, was induced to engage himself to find a means of successfully battling with anthrax. In growing the cultures, he found that if it was kept for ten days at a temperature of 42½ C, it would change the plant ; by heating for twenty-two or twenty-three days the virus would only kill a white mouse. He prepared two strengths ; treated fourteen days it would kill a guinea pig and not a rabbit.

The Delaware station had trouble with the imported virus, and have been making it themselves, and are prepared to inoculate herds, and are able to claim that they can save ninety-eight per cent. of cattle treated.

A great source of trouble had been throwing diseased dead bodies in rivers, etc. John C. Higgins thought this should be treated as a personal offence ; he spoke highly of Dr. Neale's work, comparing it to the "Little Monitor" as she appeared in Hampton Roads at a critical time in the Civil War.

Silas Betts asked how long the virus would last in the ground, and was answered by the Doctor that at death there is a gush of blood that usually will soak into the ground, which near the surface will soon be killed by exposure to the sun, but the portion underlying it is capable of living under great disadvantages, awaiting favorable conditions to ripen. He has some virus two or three years old retained in shape of seeds ; moisture is required to germinate them.

It is best to bury the carcass where death occurs, and care is necessary to include with the body enough of the bloody dirt to

make matters safe. He thought the Legislature should resort to measures to protect the live stock industry against further ravages.

Bloody murrain, a Texas fever, is sometimes erroniously called anthrax In the former, the spleen which should weigh three and one-half pounds or thereabouts will weigh seven or eight, and the blood is thin and red and lighter. In anthrax it is black. This is the Greek for that color. Frost will kill murrain but not anthrax. It will thrive better on limestone than on other land, and favors low places.

Henry Palmer asked whether animal parasites were as dangerous as vegetable, and was answered that in case of the latter, provision was made to endure very unfavorable conditions. In animal bodies, spores are not seen.

A vote of thanks was extended to the doctor for his valuable talk. On motion, legislative action on tuberculosis was referred to the Executive Committee, they to direct method of discussion.

Adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Third Month 28th, 1896.

The Guernsey Breeders' Association met Third Month 28th, 1896, at the Colonnade Hotel, Philadelphia, the attendance hardly as large as sometimes. The minutes of the preceding meeting were adopted as read, though Dr. Neale desired to modify a statement he made at the last meeting in regard to the case of anthrax which he had supposed was caused by inhaling infected bone dust; later it appeared that marsh grass used for packing fruit jars, and which was grown on infected land, was probably the cause of the infection.

Joseph C. Sharpless, Londongrove, Pa., and Dr. J. N. Richards, of Fallsington, Pa., were nominated as members; the section of our by-laws relating thereto was suspended and they were elected members of the Association.

Ezra Michener forwarded a letter from H. Hayward, of the Pennsylvania Agricultural College and Experiment Station, offering to compute the butter fat of the cows in the yearly tests, being conducted under the auspices of the Association. The Station was authorized to make out the results and send to the Secretary, these to be made public at our next meeting.

E. T. Gill invited the Association to hold its next meeting at his home; the kind offer was accepted.

We had with us H. P. Armsby, Director of the Pennsylvania State College and Experiment Station, who favored us with a talk on "Dairy Feeding." At the Station there had been conducted a number of experiments, in order to find if possible the proper amount and quality of feed to use for dairy cattle, from an economical standpoint. The first thing to consider was, how much food to give. In the first lot, nine pounds of grain per day were fed; in the second, twelve pounds, and in the third, fifteen pounds. Hay feed varied nearly in proportion to the grain feed. One disturbing feature was the decrease in lactation as the feed increased. Five periods of feeding were made, the first and fifth were light, and the average cost was eighteen and one-third cents per day; second and fourth heavier, cost per day was near twenty-two cents; the third period was heaviest, twenty-four cents per day at the prices then ruling for feed.

Butter produced, first period, twenty-five and one-third pounds; second and fourth a little over thirty-one pounds; butter thirty-five cents per pound and no account taken of skim and butter milk. Taking butter value from cost of feed, the product resulting over the cost thereof as profit was, in the first and fifth, .06.95c per day; second and fourth, .09.18c per day; and for the third and heaviest feeding, 6.65c per day; thus showing the most profit in a moderately heavy feed rather than a scant or a very heavy ration.

First and fifth ration had 9.6 pounds grain, 18.7 pounds hay; second and fourth ration had 12.5 pounds grain, 15.4 pounds hay; third ration had 15.1 pounds grain, 15.1 pounds hay.

A 1000 pound cow needs six to eight pounds of food for maintenance; to a certain extent the more food beyond that amount the more profit, though less profit per pound of food as food is increased.

The nitrogenous part of food is an important item. The efficiency of a pound of food increases as the protein increases. Take twelve pounds of food, one pound protein, and eleven of fat and force producing, the result will be same as two of protein and ten of heat and fat, as two is to ten. Make protein three pounds and the other nine, the result will be as one is to three, though an increase is made, there will be less actual profit in each. Nitrogenous food is cheaper than formerly, therefore we can afford to use it more liberally.

Silas Betts asked how the cows stood the variations in feeding, particularly when consuming all they could. He was answered that there was no apparent ill result.

Thomas Sharpless substituted cob meal for corn meal, and found that his cows did better than before; he thought there was considerable food in the cob, mainly starch, though he had not much data; the use of cob meal seemed to be of advantage mechanically.

John I. Carter thought we could use more food on cold days than we could when it was warm and close.

John Gould was quoted as advancing close confinement; he only fed six pounds grain. There is perhaps more profit in this course at the time, as there is so little exercise necessary for the animals, though it was thought to be hard on the constitution to be kept so closely confined.

John I. Carter considered a cow as a machine, to be used for making money during her period of usefulness; he encouraged the use of more bran; he used eight pounds bran, one pound cotton-seed meal, and three pounds linseed meal, a little fodder and twenty to thirty pounds of ensilage. Cost of this daily ration, twelve cents.

Silas Betts could not allow this sort of doctrine, and thought such dairymen could only live on the results of other breeders. The dairyman, it is true, has his cows to make his money, and if he has not the dairy type, he need not attempt to raise calves to fill up the places made vacant by bologna sales and other wise.

Prof. Armsby thought there was not enough corn on ensilage to make a balanced ration. At the Station they were using cob meal, buckwheat, midlings and linseed meal; no ensilage.

The Association adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Sixth Month 12th, 1896.

The Guernsey Breeders' Association met at the home of John I. Carter, near Chatham, Pa., Sixth Month 12th, 1896. Roll call showed a very good attendance both from the neighborhood and from distant points.

The first business taken up after the adoption of the minutes of last meeting, was in regard to resolutions concerning our late and

most valued member and co-worker, Silas Betts. The following was presented and read, and it was unanimously adopted as expressing our feelings:

WHEREAS, It has pleased the Almighty Ruler of the Universe to permit death to come into another of our homes where this Association was ever welcome, therefore,

RESOLVED, That in the death of Silas Betts, the Guernsey Breeders' Association has lost one of its founders, as well as a most useful member; to every one of us a friend; at once polite, suggestive, inspiring, encouraging; one who rarely failed to attend its meetings; who always added materially to their entertaining and instructive features, now so long and so fully recognized by its members.

RESOLVED, That Silas Betts was a most representative breeder of Guernsey cattle in America; not only an enthusiastic admirer and practical breeder, but also because of his keen intellect and polished speech and ready pen, he was the foremost Guernsey champion, a fact fittingly recognized by the elevation to the Presidency of the American Guernsey Cattle Club, in which relation he died.

RESOLVED, That the members of this Association most keenly feel their loss, and desire thus to express their sorrow and sympathy for the widow and children of their deceased brother and friend, directing that a copy of these resolutions be sent to them, and that one shall form a part of the permanent records of this Association, and be asked a place in the "Herd Register and Breeders' Journal."

A number of members added their testimony to the worth of our departed friend.

Charles Edwards, Faggs' Manor, Pa.; M. Harvey Ivins, Penn Valley, Pa., and R. Levis Shivers, Camden, N. J., were nominated as members of the Association. The by-laws were suspended and they were duly elected on payment of the initiation fee.

The yearly tests for the greatest amount of butter fat, next claimed the attention of the meeting. The competitors were not restricted in feeding the contesting cows, and the manner of keeping the records, was not precisely the same with all the breeders (three in number). Three prizes were offered, viz: First prize, $100; second prize, $50; third prize, $25. The winners were as follows: First prize, "King's Myra," American Guernsey Cattle Club, No. 5399, made 539.48 pounds of butter. She was fresh Twelfth Month 12th, 1893, served First Month 22nd, 1895, and is four years old. Test commenced First Month, 1895. Owner, Ezra Michener, Carversville, Pa.

Second prize, "Imported Beauty des Domanes III," A. G. C. C., 4933, made 504.77 pounds butter. She was fresh Ninth

Month 25th, 1894, served Second Month 7th, 1895, and is six years old. Test commenced Tenth Month, 1894. Owner, Henry W. Comfort, Fallsington, Pa.

Third prize, "Mary Marshall," A. G. C. C., 5604, made 485.55 pounds of butter. She was fresh Third Month 16th, 1895, served Fourth Month 3rd, 1895, and is four years old. Test commenced Third Month, 1895. Owner, Ezra Michener, Carversville, Pa.

The cows winning first and third prizes were fed a liberal but by no means an excessive ration, varying through the year, wheat bran, corn meal, cotton seed, and oil cake meal, glucose, hay and fodder, in varying proportions. A sample winter month reading as follows: Three quarts each of wheat bran and glucose, one quart each of cotton seed and oil meal and some hay.

The second prize cow, at about the same time of year, had ensilage, six pounds of bran, three pounds cerealine, three pounds cotton-seed meal, and a little hay.

Summer sample rations for same cows are as follows: First and third prize, pasture and four quarts of wheat bran, four quarts of glucose, and one quart of cotton seed meal per day. Second prize, grass and eight quarts of bran per day.

The difference in food given did not affect the award, but was made a part of the record for the instruction of the members.

John C. Higgins entered "Pomara III," 1743, dropped Fourth Month 22nd, 1882, made 443 pounds of butter; "Golden Horn's Mary," 8975, dropped Eleventh Month 23rd, 1892, made 407.9 pounds of butter. These cows had grass only from Fifth Month 10th to Ninth Month 10th; the rest of their extreme daily ration was eight quarts bran, one quart cotton-seed meal, one bushel corn ensilage and clover hay at night. "Golden Horn's Mary's" test was after the first calf, Fourth Month 17th, 1895, to Fourth Month 1st, 1896; in the meantime she dropped a calf Third Month 12th, 1896. There was considerable discussion on the subject.

On motion a vote of thanks was extended to all who took the trouble to make the tests for such a long period. On motion it was agreed to continue the tests for another year. On motion a vote of thanks was also extended to the State College, and to Prof. H. Hayward, for the labor in computing the results of the tests.

There was so much interest awakened in the proceedings of the meeting that anything short of an announcement for dinner would probably have gone unheeded. Being tempted at a vulnerable point, we adjourned until after noon. Full justice was done to the bounteous repast provided.

After dinner, an inspection was made of the new cow barn, accommodating fifty cows, silos, creamery, green-houses, etc., and later in the day the large herd of cows, which were a credit to their owners and well kept surroundings.

Sometime previous to the meeting, the late Silas Betts was requested to have a paper to read upon this occasion. He said while preparing it that it would be the last he would write for the Association. As though writing his own commentary, he left for us an address, rich in deep, mature thought, and founded on well grounded Christian truths:—" The Influence of Education upon Successful Occupation, Especially as it Relates to Agriculture."

On motion, I. W. Nicholson, who kindly read the paper, was added to the Executive Committee to endeavor to get permission from the family to have the address published in the public press, also in pamphlet form, inserting the memorial adopted by this Association, together with any other comments they might see fit to add, the Association to bear the expense of said work.

John I. Carter read a paper on "Farmers and Legislation," a well written article, urging farmers as a class to see to it that they have a better representation in legislative matters, pointing out numerous evils, touching on immigration, and very briefly on the money question.

Some time was then taken in lively discussion on political matters, reference being made mainly to those of Chester County.

This was probably one of the most extended meetings the Association ever held, as trains favored, and the universal feeling seemed to be that we had enjoyed a very interesting and instructive occasion.

On motion adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Ninth Month 11th, 1896.

The Guernsey Breeders' Association met Ninth Month 11th, 1896, at the home of M. M. and E. J. Hollingsworth, Landenberg, Pa. Roll call of members showed a good attendance from Pennsylvania, New Jersey and Delaware.

When the President called for nominations, two names were offered, John P. Sharpless, London Grove, Pa., and Edward Sharpless, Landenberg, Pa. The by-laws were suspended and the Secretary authorized to cast the ballot, and they were elected members.

The Secretary informed that he had received three hundred copies of the Betts address, and that they were at the disposal of the Association. On motion he was requested to send a copy by mail to the members of the Guernsey Breeders' Association, also to those of the American Guernsey Cattle Club. The Secretary also informed that the prizes for the first year's butter fat contest had been paid.

The first subject for discussion was, "The Rearing of a Cheap Crop of Corn," by John L. Balderston. He read a paper on the subject, stating that the grass was winter killed badly, and though late, he concluded to turn over four acres, and seed to corn; heavy rains prevented, and it was Sixth Month before the teams were started; rain again interfered, and the grain was not planted until the 6th inst. The crop was worked once before haying, another time during a damp time in wheat harvest. No phosphate was used. The result was six hundred bushels of ears, say three hundred bushels shelled corn; making allowance for teams and labor, the cost was seven cents per bushel. Practically the corn had not cost that much even, as the teams had to be kept at any rate. The land was seeded to crimson clover. The question was asked whether the heads of crimson clover were objectionable to cows, as they do not seem to relish them. Dr. Neale replied that he thought they were, and apt to be avoided by them on account of their harshness; he narrated a case where a farmer at Newark, Del., had a twenty-five acre tract of young crimson clover; he turned his stock out while it was quite small, before coming into head, twenty-five cows, nine horses, besides perhaps forty ewes and their lambs; this crop kept them five weeks and they thrived on it.

The Secretary had a paper on soiling crops, outlining the habits and uses of numerous crops, with bits of experience or observations of growing and handling some of them.

Dr. Neale spoke of oats as being a hard crop on the soil, while peas are the reverse; of the latter crop he considered two bushels per acre heavy seeding; one bushel was sufficient if they germinate properly. The peas are really beans. The Conch pea, the Whippoorwill, a spotted seeded bunch variety, and the Clay, were named. Soil conditions determine the kinds adapted to particular localities, and a wet or dry season of course makes a difference.

Having oversight of the Station farm at Newark, this year, he determined to mow the thirty-five acres that had been previously held for pasture, and put in four acres of peas; result, fifty loads of good hay; the peas from a small acreage, different sowings, had kept up the flow of milk of the dairy herd; a second growth was now luxuriant, though the stock did not seem to relish it.

The subject of basic slag phosphate was now brought up. Here again Dr. Neale gave us much valuable information. The available phosphoric acid in this product is radically different from that in acid phosphate, though the plants take kindly to the former. He gave us briefly the process of manufacture. The slag from iron works, containing the phosphoric acid, is put into large iron converters lined with lime, and lime is added to the slag. The whole is subject to hot air blasts, and made into a molten mass; the iron goes down and the slag and lime go up; the lime causes the upper part to slack and become a fine powder, and the product is sold according to the degree of fineness. In the town of Peine, Germany, the slag was used in making roads. It was ground up by the action of the wheels, and the dust was blown over to the adjoining fields. Land that was poor was converted and made good, and good land was changed to better. This led to further investigation. The Doctor stated that the product could be had for six dollars per ton, F. O. B., and would analyze sixteen per cent. phosphoric acid. This fertilizer is very good for grass, and it is better to buy it than bone, in fact, taking dollar for dollar, it will yield more profit than bone.

The discussion was one which deeply interested all, but the dinner hour had arrived, and the meeting was adjourned until 2.30 P. M.

The day was all that could be desired, the long drought had been broken, and the dust was settled, and we were in good case to enjoy the hospitalities of our hosts. A number of tables had been spread on the spacious lawn; all did justice to the substantial repast.

Dinner over, numerous members and visitors were to be seen grouped around enjoying social converse. Gradually the company changed base, and were interested and instructed in examing numerous forage plants grown by Henry Palmer; sweet corn, sorghum, pop-corn, teosinte, maize, kaffir corn, and rape, supplementing, as it were, what had been read regarding them in the morning meeting. The universal opinion seemed to be in favor of corn, the king of crops in this section of the United States.

A very important part of the country meetings was now on the programme, viz: viewing the herd of thoroughbred and grade Guernseys. Mature cows showed care in selection and bore evidence of their good working qualities. There were many young animals being raised on the place, which was a healthy sign. The herd numbered, all told, fifty or more animals. The bulls, two in number, were of course registered Guernseys, the older one being a particularly fine specimen.

The meeting again convened somewhat after the time adjourned to, and the phosphate subject was continued. Dr. Neale explained that there was more phosphoric acid in the ground than one hundred corn crops would take from it, and twenty times as much as we put in, as it were, by the spoonful. The problem is how to utilize it. Litchens have power to take substance from the bare rocks, in fact make indentations in them. We should seed ahead of the wheat crop, plants that will take out of the soil much more phosphoric acid than we can put in, and then plough this in, for instance, clover, vetches, and peas. The Germans grow some such plant between each grain crop, thus digesting the ground for what is to follow. We grow corn, wheat and oats in succession, and unless the soil is heavily fertilized, can hardly expect a continuation of heavy crops.

The time for the train had nearly arrived, and the meeting adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 25th, 1897.

The annual meeting of the Guernsey Breeders' Association was held First Month 25th, 1897, at the Colonnade Hotel, Philadelphia. Minutes of the previous meeting were read and adopted.

Nominations of officers for the year then followed, and were as follows: President, Edward S. Harmer, Moorestown, N. J.; Vice-Presidents, Joseph Evans, Marlton, N. J., and Ephraim Tomlinson, Marlton, N. J.; Secretary and Treasurer, William B. Harvey, West Grove, Pa. Executive Committee, in connection with the above, John I. Carter, Chatham, Pa.; John C. Higgins, Delaware City, Del., and Henry W. Comfort, Fallsington, Pa. The above ticket was duly elected.

The Secretary suggested the propriety of having a committee on legislation in Pennsylvania, New Jersey, and Delaware, to use its influence for the benefit of the members of the Association, stock breeding and agriculture in general. It was voted that a committee of three members from each of the States of Pennsylvania, New Jersey, and Delaware, be named by the President to represent us therefrom.

John I. Carter brought up the subject of the new Butter Board of Trade which was about to be established in Philadelphia, for the promotion of dairy interests in the United States, and the growth of export trade ; he read an extract from a printed article to the effect that England and other countries imported but a very small percentage of their dairy produce from this country, that portion being of a very inferior grade ; while Denmark enjoyed the largest share of trade.

The nomination of new members, omitted at the regular time, was taken up ; the following names being presented: Charles B. Chase, Trenton, N. J.; H. W. Satterthwait, Fallsington, Pa.; George L. Gillingham, Moorestown, N J.; D. Thompson Mitchell, Union, Del. The Secretary was authorized to cast the ballot and they were accordingly elected.

Dr. M. E. Conard then gave a talk on the economic and scientific rearing of calves ; particular stress was laid on the shape of the cow which was to be the mother of a class of calves to perpetuate her good qualities. The dairy type of cows does not as a rule give birth to large, fat and strong calves, but they are apt to be of low vitality. Such animals require good care and are not the kind to thrive after being dropped in the snow.

The first milk differs from that of the normal product in that it is largely composed of albumen ; after a few days the colustrum changes, and the calf generally subsists on pure milk. The milk-producing organs are at such times apt to be inflamed, and in addition, there may be too much of the product for the calf ; we ought to protect it and not allow it to be overfed. The rumen of a calf at this time is but one third as large as later, and will not accommodate a large amount of food at a time.

In the case of colts they take a little milk, then play and lie down and before long repeat. Mares secrete but slowly, and there is but little trouble with the digestive organs of colts. The rumen will increase in size as rapidly on a milk diet as though rough feed was given.

It is almost impossible to cure a bad case of scours in calves; they can sometimes be stopped by nearly starving the animal; say two pints of milk per day, with some flour and a little cinnamon or allspice; better not give strong stimulants.

It is to be observed that where quite a number of calves are fed together, the strongest animals for a while have more than their share of food; they become overfed and gradually lose their vitality and also their standing in the herd; and later, one which enjoyed a smaller amount, being able to assimilate properly, is able to secure and maintain the position of master among them.

Calves ought to be fed three times per day; and it should be done by an interested person; the owner or best man, not the boy.

John C. Higgins asked the doctor how soon should a calf have clover hay; he was answered as soon as the stomach was ready, probably at one week old; and rumination would commence when rough food was taken. If the stomach is overloaded with milk, the animal is apt to have an abnormal appetite, because there is not a proper assimilation of food; at such time it may eat too much hay, and the gastric juices will be found to be lacking; the food lies in stomach, gases form, and in some cases there is distention thereof and the calf dies. While drinking milk, it is not necessary for them to have water.

It was not thought by the doctor that a case of the scours rendered the animal incapacitated for work in after life.

According to previous arrangements, the hotel furnished lunch for the Association, and the time having arrived for partaking thereof, that became the absorbing duty of the hour.

After lunch, the President announced the Legislative Committes as follows: Pennsylvania—John I. Carter, Chester County; H. W. Comfort, Bucks County; William H. Miller, Delaware County.

New Jersey—I. W. Nicholson, Camden County; Joseph Evans, Burlington County; Charles Howell Cook, Mercer County.

Delaware—John C. Higgins, Dr. A. T. Neale, and E. B. Staggers, Jr.

The Auditing Committee reported that they had examined the accounts of William B. Harvey, Treasurer, and found them correct, there being a balance in his hands due the Association of $37.77.

H. W. Comfort spoke in relation to the Senate bill of the National Congress, regulating the opening of public territory under the Homestead Act, thus further increasing the competition of the Eastern farmer.

S. Morris Jones presented the following resolution which was directed to be signed by the President and Secretary and sent to our members of the House of Representatives:

"The Guernsey Breeders' Association of Pennsylvania and New Jersey, etc., believing that the bill in relation to a Homestead law, recently passed by the United States Senate, if it becomes a law would tend to still further increase the already depressed condition of agriculture, request its members to use every legitimate means to have bill defeated in the House of Representatives, and ask our members in that body to do all they possibly can to prevent its passage; also that a copy of this resolution be sent to each of our Representatives signed by the President and Secretary."

Ezra Michener then read the following article on "Economical Handling and Feeding of Hay and Corn Fodder in Winter."

ECONOMICAL HANDLING AND FEEDING OF HAY AND CORN FODDER IN WINTER.

The economical handling and feeding of rough feeds in winter, is a subject of greater importance than is generally supposed to exist, if we look around at the different practices of feeders over the country; some do not haul their corn fodder at all, but leave it in the field to be almost spoiled by wind and rain. When some is wanted, a team is started to the field and the fodder picked up or pulled out of the snow or mud, as the case may happen to be. I saw this on a horse farm only a couple of weeks ago, with the colts and brood mares running out on the summer pasture field, tramping and spoiling the next summer's food.

The hay that is fed in winter is always, or nearly so, gotten in the barn, where it is most convenient. This, if of good quality, is as economically fed whole as any other way. If not first-class, and the stock do not readily eat it in this shape, it is very advisable to run it through a cutter, and mix the grain feed with it, when it will be readily eaten, with good results.

It is in the feeding of the corn fodder that the greatest waste is noticed. This should be hauled in as soon as sufficiently dry to keep, and either put in the barn or well ricked as near as convenient. It should all be run through a good cutter, or crusher, and the grain ration mixed with it, a feeding ahead, that is, in the morning for the night feed, and at night for morning. By this means nearly all is eaten, and there is no waste worth mentioning.

In the old style of throwing the fodder around the barn yard in the manure to be trampled under foot, and less than one-half to be eaten, there is great waste, greater in fact than can be afforded where the farm is run to its full capacity. Of course this cutting takes time, but it is time well spent, and keeps the boys out of mischief.

Hay is now in our section the dearest feed we have, and wide-awake dairymen must use all the economical substitutes they can for this dear feed. By cutting the corn fodder, and giving a good, well balanced ration with it, hay is only required once a day, or could, in fact, be dispensed with altogether, and the cows (and calves over six months old) be kept in good condition, and the cows giving a good flow of rich milk, and the calves growing nicely.

Whether it is economy to have a silo, or cut the mature corn fodder, each one must judge for himself. I have never been able to see the economy of the silo, and therefore cut my fodder, and feed in the way mentioned above, fully believing with as good results as can be obtained with ensilage.

EZRA MICHENER.

John I. Carter read a report of the working of their dairy, showing a neat margin of profit; he claimed that butter was even more profitable than milk, though they sold the product from their own herd as milk. His results are as follows: Cost of keeping fifty cows and products from same. One-fourth of this herd are heifers with their first calves. At this time some of the cows have calves by their sides, and some are dry, and springers. The ration below is the average of food given the whole fifty. The large cows, that are milking well, get more than others, of course. The kind of food, the amount, the analyses and cost, is as follows.

Kind of feed.	Lbs.	Dry matter.	Protein.	Car. Hyd.	Fat.	Whole weight.	Cost. Cents.
Ensilage	25	6 97	.28	3.93	.27	4.83	.2
Cut fodder and millet	6	4.00	.13	2.10	.04	2.27	.15
Wheat bran	5	4.40	.60	1 94	.15	2 87	.3
Gluten meal	4	3.62	1 02	1.92	.22	5.16	.25
Cotton-seed meal	1	.92	.37	.15	.13	.65	.1
	.41	19.91	2 40	10.04	.81	15.78	.10

Cows Dr.	Per day.
50 cows at 10 cents per day	$ 5 00
To 1 man and 2 milkers, at $360 per year	1 00
2 extra milkers, 2 hours each	40
Hauling milk to station	30
	$ 6 70

Cr.			
320 qts. at 3½ cts. per qt . .		$12 20	
To 2½ loads of manure at 60 cts . .		1 50	
		$13 70	$13 70
			6 70
			$7 00

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eighth Month 18th, 1897.

The Guernsey Breeders' Association met Eighth Month 18th, 1897, at the home of James L. Branson, near Langhorne, Pa. Members coming by rail were met at the terminus of trolley line and conducted through a beautiful section of country to the well kept estate of our host.

The meeting was called to order about eleven o'clock by the President. The minutes of last meeting were read and adopted. Thomas B. De Cou, of Trenton, N. J., was nominated for membership; the by-laws were suspended and he was elected.

Ezra Michener cited the case of a cow that had given stringy milk, due to microcus of viscus, caused, it appears, by eating leaves of butter wort, the under sides of which favor the growth of the disease germs.

Dr. Neale said that the milk from one cow troubled with the malady would inoculate the product of the whole herd. The cows causing the trouble should be isolated; he thought the remedy was hydrochloric acid, given in small doses.

A committee of three persons was named by the President to examine the herd of milch cows and decide which, in their judgment, ranked best, both for quantity and quality. Another committee of three was appointed to have charge of testing the samples of milk taken that morning (Babcock method,) the work to be performed after dinner.

The subject of beets vs. ensilage as a food for dairy animals, was then taken up. J. L. Branson was high in his praise of beets; he used the Silesian Sugar variety, and grows six to eight tons per acre. His winter ration was six pounds of bran, four pounds gluten meal, a bushel of cut hay, oats and peas, then at noon about one-

half bushel cut beets. He thought beets added solidity to the butter, and gave it a firmer flavor. He used about five hundred pounds salt and about five hundred pounds guano per acre for growing his roots. He thought beets were valuable as a health promoter. John P. Sharpless thought beets good for general health of the cow, but not much for profit in milk and butter.

The question of relative cost of harvesting a crop of corn and ensilage was answered by H. W. Comfort. He said the expense of putting away a crop of corn, grinding, etc., ready for a cow, was about fourteen dollars per acre, and that it costs eleven dollars per acre to put away a crop of ensilage. John W. Sutphin said he found that he could grow as many carrots as beets, and that the former were much more nutritious.

Our host, mindful of the needs of the inner man, now asked us to partake of his hospitality, and the assembly, seated around in the rooms and hall, enjoyed the plenteous repast, sandwiched with pleasant social converse.

As is customary at the country meetings, the buildings, grounds, stock, etc., were inspected; the dairy herd comprised twelve milch cows, mostly registered Guernseys, and they were proving themselves workers, as we were informed that from the first of the year to Eighth Month 1st, the butter yield had been 2,178 pounds, 187 pounds per cow for seven months. Judging from the numerous stacks near the large barn, the crops had been bountiful.

An interesting feature was a coal oil engine on a track at the barn bridge. It could be moved to line with machinery at different places on the barn floor, and was used for pumping purposes also. This was rather a pet of the proprietor, and from his remarks, we would infer that he would much prefer managing this piece of energy to taking life easy indoors.

Unfortunately the samples of milk had not been taken from a thoroughly mixed entire product of the individuals in the herd, and the Babcock test showd results accordingly.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Tenth Month 15th, 1897.

The Guernsey Breeders' Association met Tenth Month 15th, 1897, at the home of William I. Tomlinson, near Kirkwood, N. J.

The day was charming, and a large assemblage responded to the invitation issued. After roll call and reading of the minutes of the previous meeting, which were adopted, there was a nomination for new members. The following names were offered: Edward R. Strawbridge, Moorestown, N. J.; William Matlack, Moorestown, N. J.; J. L. Hope, Madison, N. J.; Edward W. Hunt, Kirkwood, N. J.; Harry Earl, 135 Ocean Avenue, Atlantic City, N. J.; Charles A. Albertson, Magnolia, N. J., and Jacob C. Lippincott, Kirkwood, N. J. The by-laws were suspended, and the above were elected members of the Association.

John I. Carter read a paper on a discussion recently had with a person regarding the casein in milk of Holstein and Jersey cattle. The essayist took the ground that the Channel Island breed gave the most fat, and that the greatest amount of solids was in the richer milk. This was in opposition to the views of the Holstein adherent.

George Abbott said that casein (solids not fat) invariably increases with the fat, and that the Holsteins had nothing of which to boast, for if low in fat it must be low in casein. That the only claims that the Holstein could make was that she might produce cheese more cheaply than the Channel Island breeds.

John L. Balderston had a sample of hairy vetch, a legume; he stated that in Ireland it was used as a forage crop for cows. It was about five feet long and bore a profusion of clusters of blue flowers; the plant keeping green all season, was a climber by nature. It was thought that it would make a good feed in a dry season, and the fact that it kept green was in its favor, as corn was apt to sufer if weather was extremely dry.

George L. Gillingham read an instructive paper on the "Future Needs of Successful Dairying," which elicited considerable comment; the conversation drifting to milk fever. It was remarked that cows which had been driven or shipped a considerable distance by drovers had no trouble with this dreaded malady, the exercise and hardship experienced acted as a preventative. It was suggested that likely subjects might be exercised vigorously, and put through a home drill to insure the change of nourishment from the fœtus to the udder without danger.

George Abbott thought cows should be forced for six or seven months after calving, then as they advanced in pregnancy should be stinted in their rations.

The discussion though animated, was suspended as our genial host announced dinner. At this, all seemed to do full justice ; surely the fault was their own if they lacked ; the time for sociality was extended, and considerable time spent in inspecting the buildings and surroundings on this extensive and model New Jersey farm ; the broad, long avenue, with evergreens on either side, and commodious mansion at its terminus, told at a glance, on approaching, of liberality in plans and execution.

The working herd of perhaps thirty or thirty-five head, were mostly thoroughbred Guernseys, and numerous young animals were on fine green pasture near by. The product of the herd was sent to Philadelphia as milk.

At the afternoon session it was voted that the annual meeting of the Association be held at the Colonnade Hotel, Philadelphia, and that a lunch be ordered at individual expense.

It was voted that the Secretary be requested to write to our fellow member, John C. Higgins, Minister at Dundee, expressing an appreciation of his worth, and request that he write the Association regarding the dairy interests in Scotland, or any other matter he may choose to communicate.

I. W. Nicholson was requested to report as judge of Guernseys at the late Trenton Fair. He said there were ninety-five Guernseys entered, and it was gratifying to note the improvement individually, as compared with five or six years ago.

Joseph Evans thought it was the best lot of Guernseys he ever saw together ; more attention is paid to formation of udder and general characteristics, which go to make a superior dairy animal.

George Abbott then spoke on "Pasteurized Milk." Our essayist this morning spoke regarding the production of this important food element, and this talk was on lines filling out as it were the remarks already given. He stated that in the production of milk and cream, two important points were to be considered; thorough cleanliness in the care of the milk, then the cooling and refrigeration. If full care was exercised in preparing milk for market, there would be little need for pasteurizing.

In France, he saw vendors with vessels of milk over charcoal fires ; there, the ice supply being scarce, heat was used to retard fermentation germs, instead of cold. In Germany, heat is applied

to milk before it is cooled, then in butter making the desired germs are added. In sterilizing, the milk is brought to a point a little above the boiling stage ; this to some extent injures the flavor and digestible qualities of the product. At a temperature of 167 degrees Fahrenheit, there is no appreciable injury to the milk. Pasteur, the noted French scientist, first invented the process. It was found that a temperature of 160 degrees killed the disease germs, including the lactic acid germs, which are among the most stubborn, but yield at 157 degrees. In pasteurizing, it is desirable to hold the milk at 160 degrees for twenty minutes to one-half hour. In the process used in his (George Abbott's) business, he thoroughly sterilizes the bottles, which, by the way, are specially constructed with a rubber cap fitting into an accurately fitting recess in the neck ; the bottles are then nearly filled with milk and immersed into a tank of water ; this is rapidly brought to the proper temperature, and held for the desired length of time ; then the water is drawn off and crushed ice liberally applied over and around the bottles, reducing the whole to a low temperature quickly, the germs having had chance to escape ; the cooling causes the rubber cap to be sucked partially into the neck of the bottle, rendering it practically sealed. The product, if kept cold, is ready for a trans-Atlantic trip, or if again treated, could be sent without refrigeration. The sudden heating and cooling is what kills the bacteria. Milk as it comes from the cow, contains from 10,000 to 100,000 bacteria to the cubic centimeter. A sample of twenty drops, tested recently, had 307,560 bacteria ; after pasteurizing, it contained 285 germs. In a second test even fewer germs survived. By repeating the operation three or more times, the milk will retain its sweetness for months. Some doctors recommend adding water and cream to milk for infants, but we were now told that this pasteurized milk was being used with marked success. Five per cent. and upwards is the standard for fats, and if too rich, sterilized water from the teakettle can be added, and not run the risk of disease germs in the cream.

The afternoon was well spent, and the meeting adjourned to meet at the call of the Secretary.

WILLIAM B. HARVEY, Secretary.

THE FUTURE NEEDS OF SUCCESSFUL DAIRYING.

We are no longer content to attempt a long journey in the old style stage coach, as were our forefathers, nor is the mercantile man content to go to his place of business in the more modern street car drawn by horses, but must be swiftly carried from his home to his office by electricity, and when there, no longer has time to answer his many letters with pen and ink, but instead, hurries them off on the rapid key of the type writer.

So we, as dairymen, have to put away some of the customs of the past, if we expect to be successful in our business. We can no more follow the customs of our fathers and successfully compete with those in the same business, than can the mercantile man follow old customs and be able to meet his competitors.

As a country becomes more thickly populated, there are constantly, more engaged in the same occupation for a livelihood. This relates to the occupation we represent to-day, as well as many others. The dairyman of the future, as well as the present, will look carefully, therefore, about him to discover if possible, how he may be able to best meet this competition. It will be necessary for him to possess a perfect knowledge of his business so far as possible. While it costs something to procure knowledge, still in many cases ignorance costs one hundred times as much as knowledge, and in no occupation is this oftener the case than in handling our domestic animals.

The dairyman of the future will no longer be content to buy his dairy stock in the open market, as seldom, if ever, are the best animals sold, but rather those that have been proven unprofitable to their former owner. He will, on the other hand, raise his own cows, after, of course, procuring a small number of the best to be had to start with, which, it is needless to say to an assembly of this kind, should be of the Channel Island breeds.

By raising his own herd he will have an opportunity to know more of their parentage, and by proper treatment and handling will be able to keep his herd replenished with animals of a much higher type, and at a much lower cost, than by buying. He will not despise the little things, but pay strict attention to them, and will find, in many cases, it is in them that the profit lies, as the neglect of the small things many times leads to fatal results. It is in the rearing of the herd that this is important. He must know that the little calf, born from dam of the Channel Island breed, that perhaps has not had sufficient nourishment for weeks, and in some cases even months, owing to the mother having been a very heavy and at the same time a very persistent milker, is not so well prepared to start upon its journey of life, as is the one born upon the prairie, or from a Hereford, or beef type of Short-Horn, that has not been milked for several months. Knowing these things, he will be able to act accordingly and give the little thing attention and proper nourishment at the proper time and in proper quantity for the best results. In fact, the dairyman of the future will be, as it were, a trained nurse, that he may not only be able to give the proper care and attention

to the mother just at the proper time, but to the offspring as well, that it may be developed, and may I not say trained, for the work that will be expected of it in after years.

With all this he must have a love for his business, and not be willing to entrust it to uninterested employes. While it is not indispensable for him to do much of the actual labor, yet his knowledge and presence are absolutely necessary for the greatest success. While there are cases where the owner has a competent foreman, and gives very little of his personal attention to the dairy, and seems to succeed, yet the profits would be much greater if he was able to give it his personal attention, and not be afraid to take off his coat and roll up his sleeves, and enter into the smallest details, when the occasion requires.

As our Channel Island cattle become more highly bred and perfected, as we are striving to develop them each year, it will be necessary for us as dairymen in the future, to be better versed in regard to the dread disease, milk-fever, or paturient apoplexy. We will have to use preventives in order to save some of our richer milkers, for it is with them that this disease proves most fatal, and while an ounce of prevention is worth a pound of cure, it is doubly so with them.

The dairyman of the future will make a special study of this branch of his business, and in the absence of any better preventive, it has been found that when a cow is in a high condition, by placing her in a quiet stable, and feeding her on a very light diet for two weeks, composed of a small amount of good hay, and a few quarts of wheat bran, and five days before parturition, give her a drench of one pound of Epsom salts, dissolved in one quart of hot water, with one quart of molasses and two table spoonfuls of ginger, and again as soon as the calf is dropped, allowing no hay for twenty-four hours, giving warm bran slop, and allowing nothing cold to eat or drink for at least twenty-four hours, has been very beneficial. After having lost quite a number with this disease, since practicing this treatment we have lost none, or had a case in a period of four years.

With all this care and foresight in regard to the small items in connection with the dairy, the dairyman of the future will use every effort to have a bountiful supply of succulent food for his cattle the entire year, which it is absolutely possible to do. To this end, one of the essential needs will be a properly constructed silo, which will be so built that it will keep the material placed in it with the smallest possible waste, and therefore be in a well preserved and sweet condition to feed. The material put into this silo will be as near a perfect plant as nature can supply ; that is to say, not one that has been grown so thickly, and consequently so weak that nature could not put an ear upon it, but rather one that has been planted sufficiently thin for a good healthy ear to grow and mature upon each stalk. We will then have as near a perfect feed for the winter season as is possible to obtain, and be able to obtain the product of the dairy in the future at a less cost than in any other way. And

owing to the close competition in this branch of our farming operations, it is necessary for us to produce at as small a cost as possible, in order to have the margin on the right side of the ledger; and he who neglects to furnish himself with this important adjunct to his dairy operations, will be left in the race, as we can procure more feed at a less cost per acre with good ensilage than in any other way, to my knowledge, and can supply our cattle with some succulent food every day in the year.

Beginning with green rye in the early spring, which will last till pasture, which can again be supplemented with oats and peas, followed by fodder corn in successive plantings, will last till fall, when pumpkins and mangel wurtzels are ready; then summer sown oats and peas may be fed till freezing weather, after which we have the silo to last till green rye or pasture is again ready. In this way, since our silo was built, our herd has not known a single day in which they have not had one or more feeds of succulent food in connection with their dry fodder.

But even with all this care in providing an abundance of provender, it requires judicious feeding to obtain the best results, as all of our dairy animals will not have the capacity to consume the same amount, and frequently over feeding is conducive to worse results than under feeding.

Our fresh cows will need special care to make them do their best. It is well known by all experienced and observing dairymen, that the highest production a cow is capable of, is obtained the first thirty or forty days after calving, and unless a cow be brought to her highest milking point possible within that period, her production during that period of lactation, and until her next calving, will be very materially decreased. If, on the other hand, we are able to stimulate her to her highest possible capacity during this period of thirty or forty-five days, by carefully feeding and handling, she will, as a rule, continue to give a good flow for a considerable length of time. But once permit her, in her earliest period of lactation, from any neglect whatever, to fall off in her production during that time, you have lost her best services until her next calving.

With this end in view, the wise dairyman will try to stimulate every cow in his herd to a large flow by such feed as will tend to that end; he will avoid what is commonly called rich feed, but will make the feed rather sloppy, as has already been mentioned under the head of milk-fever, and use every effort to increase her flow in the early stages of lactation, as any set back at that time of lactation has a lasting effect. In fact, to accomplish the best results, we should treat her as a sick cow, and nurse her for the first six or seven days, beginning with two pounds of bran, two pounds of ground oats, and one-half pound of linseed meal per day, in warm slop for the first few days, gradually increasing at the rate of one-half pound per day, until by the tenth day she is taking three and one-half pounds of bran, three and one-half pounds of oats, and one and one-half pounds of linseed, giving, of course, some coarse feed

as hay, pasture or ensilage, and all the warm water, if in winter, she will drink. By the twenty-fifth day she should be able, if a fair sized cow, and healthy, to take forty pounds of ensilage with ten pounds of grain food per day.

In selécting, as well as raising our cows, we should strive to get persistent milkers. There is no dairy cow worthy the name that will not make a profit to the owner the first three months of her period of lactation, fewer there are that will make a profit the last six months. In choosing a cow, therefore, the dairyman of the future as well as the present, will need to select one whose outward conformation is such that would indicate that she will adhere to her milk in the later as well as the first period of lactation. The cow that is persistent is, as a rule, far more profitable than one that gives a large flow for a few months and then begins to fatten, as they always fatten at the expense of the milk flow. The former is so constructed externally and internally, that the feed she consumes is converted into milk, and none remains upon the carcass, while the latter will remain thin while in her big flush, but when she begins to shrink in her flow, immediately calls upon the feed for the increase in her carcass.

So also in raising our herd, we will select the heifer calves from the most persistent milkers, and most profitable cows in the dairy, and in rearing them will strive to develop muscle and frame, rather than fat, and avoid all feeds that have a tendency to fatten, but rather use bulky feeds that will distend and develop a large stomach, that they may be able to consume and assimilate a large amount of provender, bearing in mind, a cow is a machine by which we convert our feeds into a profitable product, and it is impossible for a mill to grind unless it has a hopper to hold the grain.

When our heifers begin their life work, we should use every care to train them to be not only heavy but persistent milkers, by extra care and feed as recommended for the fresh cow, and when showing symptoms of going dry, they should have still further care by a little extra feed and careful milking, even if giving but very little, for if allowed to go dry long the first time, the habit may become established, while on the other hand, if she is milked close up to her second calving, it will quite likely remain with her through life.

I have thus endeavored to present for your consideration a few of the cardinal points, which, in my judgment are necessary for the dairyman to carry out, in order to successfully compete with the world, believing that while we are able to conduct our business strictly along these lines, success will crown our efforts whether in the present or future.

G. L. GILLINGHAM.

Minutes of Meeting held First Month 31st, 1898.

The annual meeting of the Guernsey Breeders' Association was held at the Colonnade Hotel, Philadelphia, First Month 31st, 1898. The minutes of the last meeting were approved as read.

The first business to claim the attention of the members was the election of officers for the year. The result was as follows: President, Joseph Evans; Vice Presidents, Ephraim Tomlinson and Ephraim T. Gill; Secretary and Treasurer, William B. Harvey; Executive Committee, Henry W. Comfort, Joseph H. Matlack, and George L. Gillingham. New members were elected in the persons of J. B. Edgar, Rahway, N. J.; Joseph H. Haines, Medford, N. J.; William Balderston, Morrisville, Pa., and James S. Newbold, Morrisville, Pa.

The Secretary read an interesting letter from our valued fellow member, John C. Higgins, Consul at Dundee, Scotland; he was requested to acknowledge its receipt, and the wish was expressed that others might follow.

Ezra Michener gave us results of some of the tests of his cows, his aim being to establish families of rich milkers:

		Per cent. fat.	Total solids.
No. 1.	Mary Marshal	7.70	17.56
" 2.	" " III	6.80	16.22
" 3.	" " IV	4.30	13.56
" 4.	May Marshall	9.77	16.47
" 5.	Josie B.	4.40	13.67

No. 1 made six and one-third pounds of butter in seven days. Due to calve in Sixth Month next.

No. 2 made eight and one-half pounds of butter in seven days. Due to calve in Seventh Month.

No. 3 made seven and one-fifth pounds of butter in seven days. Fresh now.

No. 4 made four and one-fourth pounds of butter in seven days. Will be fresh in Fourth Month.

No. 5 made ten and one-half pounds of butter in seven days. Fresh now.

Dr. A. T. Neale, of Newark, Del., desired to know whether the experience of members led them to believe that cows were somewhat like apple trees, in that during some years their yield would be large, then again it would prove unsatisfactory; that he had thought it desirable to be able to devise a series of composite tests, by which samples could be taken at regular intervals over a

period of two or three years. Prof. Penny, of the Delaware Agricultural Station, had made a large number of experiments with this aim in view. It was found that bi-sulphide of carbon, mixed with the samples of milk, would preserve the fats so well that, tested three years afterwards, the result was almost identical with that taken a week after sampling. In stirring, the cream falls to the bottom of the bottle, being dissolved by the bi-sulphide; tests thus made, giving results of a cow's work over an extended period, are more conclusive than those of short duration.

Ezra Michener said he had no use for a cow unless she made over three hundred pounds of butter per year. John I. Carter had noticed a great difference in some cows, one year from another; other experience of like character was given.

H. W. Comfort found that heifers were apt to do very well for their first year, and if such was the case, not so well during the second year. He expected his herd to make fifteen pounds of milk per day for the year.

Dr. Neale kindly offered members the privilege of taking samples of morning and night's milk for fourteen or twenty-eight days; (he first sending a vial of bi-sulphide) at the end of the period, send composite samples to the Newark, Del., station, and they would be tested free of charge.

The Club now, through its individual members, presented itself to a liberal lunch at the hotel, sitting, standing, chatting, the time pleasantly sped away.

At the afternoon session, Dr. M. E. Conard opened the subject, "Parturient Apoplexy," giving a plain, comprehensive talk; he did not feel to know anything new on the topic. It was not necessary that the animal be fat, but the system is in a plethoric condition. The cow is uneasy, switchy, eyes bright, then staggers, is excited, gets down and can't get up; this occurs generally from twenty-four to thirty-six hours after calving; she gets over on broad side, eyes become glassy; when on broad side the outlet of stomach is lower than it ought to be, and the cow should be placed in an upright position. Constipation is present, and a complete paralysis of the digestive track; bladder is full of urine and it must be taken away; secretion of milk goes on nearly as usual. Milk fever does not occur after a long and painful labor, nor when considerable blood is lost, or when afterbirth did not come free, and very seldom in case of abortion. The primary cause of the trouble is sudden contraction of the uteris after birth of calf; all the walls are full of blood during the development of fœtus, which receives nourishment

therefrom. After a quick delivery there is but little loss of blood, practically none from the parent, and an excessive amount is thrown back to her; the uteris contracts, and in a few hours the blood is forced out. The blood vessels of the brain are weakest, and they become overcharged and congested, and it depends on the severity of the case whether the animal is able to absorb the blood. A vessel may be ruptured, if in the head, brain fever results, then death.

In treatment, nursing is most important; keep in natural position, and prop her there, head up; keep urine drawn, and if possible increase flow of it, thereby probably lessening blood pressure. Purgatives are dangerous. Pneumonia may result from drenching when taking fever, by putting some of it into lungs; keep nose lower than glottis, as saliva sometimes goes into lungs, causing pneumonia.

Keep grain away from cows during latter part of pregnancy. As a medicine, he favored veratrum virides. It increases size of blood vessels, thus making room for surplus blood. Buchu, bi-carbonate soda, to increase flow of urine. Give one to one and one-half pounds of salts before calving.

H. W. Comfort gave thirty drops aconite in four meal periods, directly after calving, and had no trouble with milk fever.

Dr. Conard said if temperature got below 100 degrees, the cow was sure to die; bleeding was apt to reduce the temperature, and on that account was not recommended. The whole system of intense breeding is conducive to milk fever; it is not a robust condition to stand the strains.

John I. Carter read a paper on "Wholesome Milk;" he would rather revolutionize the present methods of preparing and marketing the product.

As it was growing late, there was no time for much discussion.

The new Pennsylvania laws regarding introduction from other States, of cattle for dairy and breeding purposes was touched, and may again be presented.

Then adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Third Month 18th, 1898.

The Guernsey Breeders' Association met Third Month 18th, 1898, at the Colonnade Hotel, Philadelphia. The minutes of previous meeting were read and approved.

The following nominations for new members were made: E. B. Voorhees, New Brunswick, N. J.; W. H. Jones, Upper Darby, Pa.; W. W. Hurley, New Hope, Pa.; Edward Horne, Newtown, Pa.; Everett Palmer, Avondale, Pa.; Thomas Briggs, Newtown, Pa.; Rolph M. Harvey, Ward, Pa,; and Dr. E. H. Phillips, Cape May, N. J. The by-laws were suspended and they were duly elected members of the Association.

A circular was read, calling a meeting at Harrisburg on the 31st inst.; all who are interested in dairy and kindred topics are invited to attend. The feeling was expressed that the State Dairymen's Association was doing but little for this most important branch of agriculture, and that a live society is needed to watch legislation, keep in touch with like enterprise in other States, acting in the interests of progressive and intensive agriculture, the dairy in particular. It was voted that the Association name delegates. The chair appointed D. P. Forney, James L. Branson, and Henry W. Comfort, who are requested to report at our next meeting.

The entertainment for the day, as per announcement, was a talk on Cheese by Henry E. Alvord, chief of the Dairy Division of the Bureau of Animal Industry, Washington, D. C. Seventeen varieties of cheese had been secured from one of the fancy grocers, and were exhibited at the meeting.

Our lecturer thought that the United States should pay more attention to the manufacture of cheese, and farmers who have rich milk, such as is produced by Channel Island cattle, are particularly fitted for making a good article. The great bulk of full cream factory cheese, known as "English Cheddar," has been famous for two centuries. In this country it is known as "full cream factory." The flavor is mild, sweet, and nutty, having no specially objectionable taste. It can be kept from one to two years; when used too soon, as is often the case, it is not easily digested. This brand is taken as the standard by which the other varieties are compared. It is highly nitrogenous and flesh forming. One-third is water, one-third fat, one-third casein and sugar. Of the latter, one-third (33⅓ per cent.) twenty-five per cent. is casein.

No. 2 was English Dairy Cheese. It sometimes is richer in fat than the standard Cheddar. An instance was cited of a party

in New York who made a brand styled "Young America;" he had Channel Island cows, made a specialty of rich cheese, realized 14 cents per pound instead of the usual price, 8 cents. They made a pound of cheese from about nine pounds of milk, or $1.50 per hundred pounds of milk.

English Stilton is made from cows' milk. Morning's milk is mixed with the cream of night's milk. They are made into a form six or eight inches in diameter and ten or twelve inches high, and are too rich for a food cheese. A distinguishing feature is the blue mold running through them; this is cultivated by inserting wood skewers on which has grown the culture necessary to produce the desired effect. Several weeks are required in order to get them in shape for curing. Last year, 120,000 pounds were imported, average importation price being 16 cents.

The next specimen presented to the audience was an Edam, made in North, also in South Holland. They are oval in shape, some have tin foil over them; they are made of a rather low grade of whole cows' milk—this is a hint of the breed of cows reared in that portion of the globe. It is made from a sweet curd, made dry to make a hard cheese. It is easily digested; is one-fourth fat instead of one-third. It is shaped in modern moulds, and is kept several years. It is imitated in this country in New York, Wisconsin, and Minnesota, and there is no reason why we cannot make it as good as in foreign countries. We import from Holland 800,000 to 900,000 pounds of cheese every year, mostly Edam; importation price 11 to 12 cents per pound, and the tariff is .05 per pound.

Next in order was the Swiss Sweitzer. It is made from cows' milk, generally from whole milk; rennet is used; it is pressed somewhat, is peculiarly elastic, and is at once known by its spherical holes, formed by gas generated in curing. It is skilfully, though not scientifically made, the holes should be uniform in size. It is imitated here in New York, Ohio, Wisconsin and California. In Wisconsin it is made by the Swiss and Swiss German people. It is made here from half whole, and half skim milk. We import over 5,000,000 pounds of Swiss cheese annually; average price, fourteen cents per pound, besides duty.

The Italian Parmesan was now exhibited; the grocers had sawed off a neat cut about an inch thick, very hard; it is used mainly for gratering and cooking, for maccaroni, etc. It is made from cows' and sometimes goats' milk, as a rule from skim milk. The climate of Italy is against rich cheese; fat is below twenty per cent., a rennet cheese, and it is pressed; it keeps almost indefi-

nitely ; it has a pleasant flavor. It is not imitated here ; it is not ready to use until fully three years old. Impatient America cannot wait so long—one reason that we do not imitate in its manufacture. We import from three to three and one-half million pounds of cheese per year from Italy, price about fifteen cents per pound. In Romeo, central Italy, is made a cheese from a sort of buffalo which yelds a very poor milk ; the cheese is less than one-third water, forty-two to forty-three per cent. casein, and less than twenty per cent. of fat, a trace of sugar, and considerable salt.

The Pineapple is an American cheese ; the whole milk is enriched by the addition of cream. One family has had the monopoly of its manufacture ; they make about 100,000 pounds per year in the grazing season. It is not successfully imitated.

Sap Sago cheese traces back to the ninth and tenth century, made of cows' milk, very strong in flavor, in fact, second to Limburger. It is colored ; is made in Switzerland, and is not imitated.

Limburger was not shown, its reputation sufficed, though it must have a passing notice. Made in Belgium, of one-half whole and one-half skim milk ; it is made in copper kettles, and allowed to ferment ; ammonia is developed. About 300,000 to 400,000 pounds are imported every year. It is made in this country in Ohio, Wisconsin, and Minnesota. It is carelessly made in its native haunts. Cures from the surface inward.

There is a great demand in markets for pot cheese ; one kind is made from skim milk, and some persons realize more from that product utilized in this way than for whole milk. One dollar and fifty cents per one hundred pounds was mentioned as the return for skim milk when thus used.

Neufchatel is a variety quite popular, a rich pot cheese made in this country to a large extent ; some additional fat is added to whole milk ; rennet is used in its manufacture ; it is made in molds, forty-nine to fifty per cent. water, cured two days to two weeks, according to taste. In France, eight to ten weeks ; sometimes cured in caves, which generate a peculiar mould enjoyed by some. The Swiss came over to Orange County, N. Y., and it is made here in large quantities ; in fact more is made in that locality than in all the rest of the country together.

Cream cheese is made of very rich milk, cream added ; made in England and France ; also known as Philadelphia cream cheese, also made in Pennsylvania ; it is drained rather than pressed ; rennet is used ; it is sort of enriched Neufchatel, and was originated in this country.

The French variety of De Brie was next shown, made of cow's milk and rennet. It has a blue and red mould, and is cured on willow mats. These already have the germs of mould, and transmit it to the cheese. It is made in New York by same parties who make the Neufchatel.

De Isigny is an American cheese, though having a French name; this was a famous district for butter, and the cheese was named from it.

Roquefort was not sampled; the cheeses are large and high priced, in fact they are the most famous of French makes, originally made of ewe's milk, then goat's, and now, cow's milk, though not as good as formerly; it dates as far back as the eleventh century. It is cured in limestone caves, the temperature therefore is uniform; a mould extends through it, it is rich and crumbly; it contains thirty per cent. water, about twenty-five per cent. casein, and thirty-three per cent. fat. The mould is propagated in caves, and when not strong enough, by working in crumbs of stale mouldy bread. At one time 60,000 persons were interested in its manufacture.

Italian Gorgonzola is made in Lombardy; it is a rival of Roquefort, and cured in less time.

Camembert is a French variety, made of whole cow's milk, ripened in caves. It is also made in Great Britain.

There are over one hundred and fifty varieties of cheese made, though not much over twenty prominent kinds. It is important to get persons who are familiar with the different brands in their native homes to make imitations here. In some brands, much labor is necessary, and in foreign countries that is decidedly cheaper than here. It was stated that in a year or two we would probably be able to make all of the principal kinds in this country. A vote of thanks was extended to the lecturer for his instructive discourse.

George Abbott presented two bills, one on tuberculosis and one regarding the Board of Health, which had been introduced into the New Jersey Legislature Certain clauses were criticized. George Abbott, Dr. E. H. Phillips, and Thomas B. De Cou, together with the President, were appointed to go to Trenton and use their influence in having the bills presented in different form, better suited to the needs of the dairy interests and the citizens.

Dr. Pearson kindly invited the Association to meet at the University of Pennsylvania, Philadelphia, the time to be arranged between himself and the Secretary.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fourth Month 27th, 1898.

On the morning of Fourth Month 27th, 1898, the Veterinary Department of the University of Pennsylvania, Philadelphia, was visited by a large and interested body of stock breeders and their friends, it being the occasion of a meeting of the Association.

Perhaps an hour or more was spent witnessing surgical operations, viewing the various departments, and examining numerous specimens in alcohol, diseased and otherwise.

The meeting was called by President Evans, in the spacious class room at one end of the large enclosure. After the roll call the minutes of the last meeting were read and adopted.

George Abbott reported regarding the work of the committee appointed to watch certain bills in the New Jersey Legislature ; he said that their labors were not onerous, as an early adjournment of the Legislature occurred, and the objections noted at a previous meeting did not become laws.

Henry W. Comfort reported that the committee appointed to attend the meeting at Harrisburg in the interest of dairying and kindred matters, all went ; officers were appointed, and various sub-committees given charge of subjects needing special attention. He stated that education, co-operation and legislation were needed.

The State of Minnesota raised its standard of butter to ninety per cent., thus making it higher than other States, consequently putting it in an advanced position when offering its products in market.

At the approaching annual meeting of the Society, dairy legislation will be thoroughly discussed ; efforts will be made at our next Legislature, by a certain class, to pass laws, enforcing dairymen to produce milk to meet impractical standards.

Nominations now claimed attention. Joseph Trimble, Chester, Pa., and Paul S. Lippincott, Marlton, N. J., were nominated ; the by-laws were suspended, and they were elected members.

Our host, Dr. Pearson, at this juncture entered into an instructive talk on the objects and work of the " Pennsylvania Live Stock Sanitary Board." It was provided for in the Legislature of 1895–6. Its duties were to suppress and stamp out contagious diseases. The methods used have been devised by the Board, and not handicapped by law ; the work has been on a broad scale.

Serious outbreaks of rabies had occurred in numerous places ; inspectors were sent around ; animals exposed and bitten were killed ; care was used, and the malady abated. Anthrax had been

most troublesome in the vicinity of tanneries; five men died, and cows met their death from the disease by drinking water from streams below the places causing infection. A cargo of hides from China were sent to two factories, and trouble resulted in each case. The anthrax microbe exposed to a temperature of 315 degrees below zero for three hours will not kill it; burying germs in the ground will not kill them. Animals in diseased districts had been vaccinated with satisfactory results.

Then the work of the Board had been directed to tuberculosis in cattle. The disease is much as in human beings; if sputum of either is injected into a guinea pig, it will produce the same result. When the udder of a cow is affected, milk from such will cause disease, whether fed to man or brute. He thought that, taking the whole State, two per cent. of the cattle were tuberculous. In Germany, when the diseased animal is thin in flesh, the carcass is condemned, but if in good flesh, the affected parts are sacrificed, and the balance used for food. The Doctor told of the expensive and unsatisfactory experiments conducted by the State of Massachusetts; starting at Nantucket with a view of testing all cattle in the State, quarantining all that had been examined, and keeping others away from them; other means have since been adopted.

In some western States, the owner of the condemned animals is paid for the part of the carcass sold to be used for food, and where badly diseased, he gets but little remuneration.

There are about 2,000,000 cows in Pennsylvania. The owner applies to the Board, and the whole herd must be tested, and condemned animals paid for by the State, fifty dollars for thoroughbred animals and twenty-five dollars for others.

The new State law, providing for the testing by tuberculin of all dairy cattle brought into the State, was mentioned. It will tend to prevent other States, less careful, from unloading their diseased animals on us, to cause future trouble and expense.

In Bradford and Susquehanna Counties, tuberculosis is almost unknown; it did exist years ago. The Doctor illustrated his talk with numerous specimens taken from alcohol, and a carcass of a diseased cow was brought into the room on a truck, the place being specially adapted for just such work.

An adjournment was now in order, and the scene changed; we were invited to another part of the grounds, and the wants of the inner man amply cared for.

An afternoon session was held. The Doctor had two sheep killed, troubled with lung worms; the affected parts were placed on

the operating table ; about seventy-five out of a large flock had died of the same affection. It could be cured in the early stages of the disease. Dr. Neale wished to know whether it was proper to kill a cow at once when she showed signs of tuberculosis, or continue to inject the lymph. In his experience, he had had cases, where on subsequent inocculation, they failed to respond ; he queried whether the milk from such was injurious, as when fed to guinea pigs, they lived for six months. Dr. Pearson's observations were much the same as the previous speaker ; after the first trial, no reaction was apt to be seen, though the germs doubtless were still in the animal. He cited Prof. Bangs, of Denmark, who has had more experience than any other person, who says that we should be govered by the results of the first test.

Diseased cows may be kept, if isolated from others. Milk from cows infected was not dangerous if heated sufficiently to kill the germs.

In Denmark, the cream is, as a rule, pasteurized before being made into butter, and the skim milk has like treatment before being returned to the farmers, thus killing all tuberculosis germs in the dairy produce. The Danish plan is offered to Pennsylvania farmers, but they seem to prefer selling the condemned animals to the State rather than pasteurizing the milk.

Sometimes, cows apparently in fine condition, respond and are seriously affected ; if such are kept, they are apt to be the nucleus of future outbreaks.

Prof. John Hamilton, Deputy Secretary of Agriculture, having entered the room, was requested to speak. He said the agricultural interests of the State were being very greatly benefitted by science, that the Experiment Stations, Farmers' Institutes, and institutions like the University of Pennsylvania, are doing much in that direction.

The Association was then taken to the new building, for which a special legislative appropriation has been granted, in which exhaustive, practical experiments in tuberculosis are to be carried on. One apartment is light, roomy, well ventilated, has high ceiling, concrete floors, cemented walls, and everything is to be kept in the best sanitary condition. One apartment had very poor ventilation, was cemented, painted black, and was to be kept dark ; still another was being fitted much like the stabling found in too many of the farmers' barns ; low ceiling, cattle in close quarters, where the litter overhead, charged with impurities, dust, etc., is a continual menace to the health of the occupants. The experiments will be watched with interest.

The bacteriological building was then visited, the main object being to hear Prof. Ravnell explain the manufacture of tuberculin. We were told that the tubercule bacillus was killed at 149 degrees Fahrenheit in thirty minutes; at 155 degrees in fifteen minutes, and at 167 degrees in ten minutes. The cultures of the germs after being properly ripened on bouillon, in incubators, are steamed in gelatin, for one hour, at 212 degrees Fahrenheit; afterwards, put in a water bath at 183 degrees, from three to six hours. The disease germs are now thoroughly killed, and the mass is boiled down to one-tenth its volume; it is a glycerine extract; before use, it is mixed with one per cent. carbolic acid, which itself will kill the bacillus in one minute.

Sometimes dead germs will cause an abscess, so the lymph is filtered through porcelain, specially prepared, thus rendering the product absolutely safe. Over 2,000 cases have been tested with the lymph from this station, and two errors have been found in diagnosis.

The day was now far spent, and, without a formal adjournment the Association parted.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Sixth Month 10th, 1898.

Following previously arranged plans, a company of about thirty-five persons boarded, on Sixth Month 10th, a special car at Broad Street Station, Philadelphia, bound for Madison, N. J., via Newark; our number being considerably increased by the Trenton delegation. The occasion was the first country meeting of the Guernsey Breeders' Association for 1898.

Arriving at Madison on the D., L. and W. R. R., we were greeted by J. L. Hope, the genial farm superintendent of H. McKay Twombly. We were soon driven to the family mansion surrounded by a spacious park. A master hand had evidently laid the plans, and the execution had been most effective. The horticultural display was remarkably fine, and the whole effect was surely charming, and must increase in beauty, as the grounds, as improved, and the palatial residence, have only been in existence for about six years. The house is XV Century English in design, built of gray and black brick. In the background was an English garden of large

dimensions, enclosed by a high brick wall, and containing old fashioned English flowers. Our host was abroad, we therefore could not have the pleasure of meeting him, nor his general manager, Edward Burnett, who was also on the other side of the ocean.

The family stable was partially hidden by a group of natural forest trees, and midst the inviting shade thereof, was to be seen a flock of thoroughbred sheep. The stable is in keeping with the other buildings, and enclosed some noted hackneys, between forty and fifty in all.

Passing out from the park, we were driven to the farm buildings. Entering a hollow square, as it were, we were confronted by a large circular water tower. On it were clock dials, so large that he who runs might tell the time of day.

The character of this herd of Guernseys is generally known to breeders ; as a herd it has not been beaten in the show ring.

Considerable time was taken examining the animals in the stables. The bulls, from old "Sheet Anchor" down to the yearling, were led out for exhibit, and some of the cows ; and immediately afterward, some of the hackneys were moderately sped around the water tower track.

The Superintendent's home, office, dairy buildings and stables, formed the border of the above named hollow square ; all conformed to the general style of architecture previously referred to, and were built of brick, and the same generous outlay of cash was shown in their erection. Sanitary arrangements, embodying extreme cleanliness, were observable on all sides.

About one o'clock dinner was announced, and the company, numbering about sixty people, did justice to the ample spread placed before them.

All this, and no mention of the literary entertainment, which, from the notices sent out by the Secretary, promised to be unusually interesting; the fact is, there was too much else on the programme, and the meeting held but a short session. Two persons were nominated, in the names of H. McK. Twombly, Madison, N. J., and Edward C. Williamson, Morrisville, Pa., who were duly elected.

Many of the members necessarily made a long day, and a considerable number could not reach home until the next day. The visit to "Florham Farms" gave us food for thought, and we feel safe in asserting that all felt very well paid for the exertion caused in making the trip. The farms were conducted on business principles, dairy and farm produce being sold at high figures, not a paying investment of course on money invested, but showing what can

be done on an ideal country estate, from which others may pattern to a greater or less extent.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Eighth Month 10th, 1898.

The Guernsey Breeders' Association held a meeting Eighth Month 10th, 1898, at the home of Joseph H. Matlack, near Moorestown, N. J., nearly one hundred persons being in attendance, a large majority, members. The following names were added to the roll: Samuel R. Cooper, Marlton, N. J.; G. R. Foulke, West Chester, Pa.; Joseph H. Roberts, Moorestown, N. J.; Alban T. Ebert, Ashland, N. J.; Marshall L. Jones, Upper Darby, Pa.; Walter P. Stokes, 219 Market Street, Philadelphia; Owen L. Dudley, Moorestown, N. J.; Robert T. Evans, Masonville, N. J., and George Abbott, Jr., 1823 Filbert Street, Philadelphia.

George Abbott was requested to give an account of a recent visit to the Fairfield Farms dairy, where a particularly good grade of certified milk is made. About 400 cows were kept in two barns. The cows are cleaned at least three times per day; are treated with tuberculin; milkers, fourteen in number, have suits that are laundried daily; specially constructed buckets are used; hands and nails must be carefully cleaned; men are inspected as milking progresses, to see that they are kept so. Milk is taken to the bottling establishment overhead on wires, four forty-quart cans at a time, where it is allowed to trickle over a mammoth Star cooler. Milk is sold for twelve cents a quart, and has very good keeping qualities, the aim being to reduce to the greatest extent possible, the number of bacteria—200,000 to 1,000,000 being the usual number found in a cubic centimeter of milk handled in the ordinary manner. They say they reduce them to 10,000.

The question for the day's discussion was, "What Constitutes the Foundation Principles in Building up a Dairy Herd?" Prof. E. B. Voorhees, of the New Brunswick, N. J., Station, told of his two years' experience with their herd. At the beginning of this period, the Station farm was making 150 quarts of milk daily, sold mostly to retail trade. For the first year they had no money at their command to erect dairy buildings, but were very particular with the dairy throughout. It was not a question of making money

with them, but to be thoroughly practical. He said there were three points always to keep in mind in a successful dairy herd ; first, good cows ; second, good food ; third, handling the product in a cleanly manner.

In order to secure good milk of a uniform quality, they, at the beginning of the second year, built a special dairy house. They did no advertising, but the residents of New Brunswick found out the superior quality of the goods. A fine trade was built up at paying prices, though, as before stated, that was not the object in view. Cows that were not first-class were dispensed with, and good ones secured. Last year they averaged 6,400 pounds each. The Professor was satisfied that residents of cities did not know what good milk was. As customers became accustomed to a good article, they demanded something better than usual. He thought milk should be sold on its merits, according to quality, like grain.

George Abbott followed, with remarks on the standards of the past and present for milk, and probable demands for the future. He said that people are slow learners. They are better judges of color than richness. A brightly colored article will sell better than one that has only a heavy percentage of solids. He finds Guernsey milk particularly advantageous in his business, as it has both quality and a good color. It was supposed years ago that it was not practicable to put Channel Island milk in competition with other grades on account of the small yield per cow. This, however, is not the case ; one of his shippers informs him, after carefully kept records were consulted, that the thoroughbreds yielded a larger quantity per year than the grades. A bulletin of the New Jersey Experiment Station was quoted, showing the average cost of food per quart of milk, and pounds of fat, as follows :

	Per qt. Milk.	Per lb. Fat.
Guernsey,	1.71c.	15.3c.
Ayrshire,	1.66c.	20.6c.
Short-Horn,	1.71c.	20.8c.
Jersey,	1.75c.	22.4c.
Holstein,	1.91c.	17.9c.

He thought the time was coming when, in this country, all the dairy cattle would be Channel Island breeds and their grades, and that the price of milk would, in his judgment, be higher. It would come more into competition with butter, such milk making more of that product; so that if milk was not satisfactory, the product would be turned into butter. In this day of low prices, we must realize that dairymen should not expect much rise in prices for their

products. The great thing seems to be a cheaper production in nearly all lines. Some discussion regarding Channel Island milk for infants has been passing through the press; the theory is advanced that their milk is too rich. It is better to take the rich milk and mix with a like quantity of water.

A doctor advanced the idea in the "Country Gentleman" that Channel Island milk had fat globules of unusual size; that the fat goes right into the blood. But in discussing the matter with eminent physicians, George Abbott had learned that the fat globules were reduced by the pancreatic juice, and he thought the large globules, being more readily churned than smaller ones of some other breeds, would be more easily digested in the human economy. Milk should be sold according to its richness, color, and cleanliness, and the microscope must test the latter, not the eyes of the farmer.

John I. Carter read a paper on "Butter and Dairy By-Products." He thought butter was the main product that should be considered in building up a dairy herd. He is quite extensively engaged in making dry curd from refuse skim milk, and eight to nine cents per day can be made from the skim milk of a good cow. Then there is still left the milk sugar, four to five pounds to one hundred pounds of milk, which he thought would be extracted in the near future. The remaining whey was good for hog feed.

M. E. Conard, V. M. D., then read a paper on "Inheritance of the Dairy Cow." He stated that like begets like; we are made up of second-hand character. Some special traits may lie dormant in the parent, and by environment, be brought out in a later generation; the same rule will hold in lower animals. The original cow was constituted to produce sufficient milk to feed her offspring two or three months, then enjoy a long period of rest before producing another calf, the result being good physical constitution. In course of time, man wished to change the natural order; by systematic breeding and feeding, he made milk and butter production the main point, and this process was occasionally interrupted that she might give birth to a puny calf, which in turn was expected to be as good or better than her dam. The pregnant cow will emphasize in offspring the quality most prominent during the time of pregnancy. This in a dairy cow is milk production. Now breed her to a highly-bred dairy-type bull; the result is a calf of unbalanced parts, the physical, natural life weakened. If this is followed up, generation after generation, there will probably be a break-down in constitution, and a predisposition to tuberculosis, abortion and other troubles. The Doctor would not be understood as opposed to good

breeding ; but he wanted careful breeding. There ought not to be a break-down in middle life.

Thomas Sharpless, who has given much careful thought to the subject, said he was taught when a boy, that to get a good animal of any kind, it was necessary to have a good mother. This applies to the human family as well as to the dumb creation. He is now milking twenty four cows, making butter ; nineteen of the twenty-four are his own breeding. He is not hampered by the necessity of producing black tongues, buff noses and the like, but aims for the practical work at the pail ; he uses thoroughbred Guernsey bulls on good grade or native cows. The blood of Jerseys and Guernseys seems well adapted to cross, one with the other. He thought the bull was three-fourths of the herd, and it is most important to have him right. Animals are different in their powers of reproducing themselves ; in prepotency. Some do not seem to have power to transmit good quality ; perhaps it is not sufficiently established in themselves. He wants the bull to come from families that have been noted for good qualities for generations. In raising calves, he of course discards anything but those from satisfactory parents. He once had a red Devon cow ; he bred her to a thoroughbred Guernsey bull ; first calf was red ; second calf, red and white ; the third calf had more white on it, and by the time the fourth calf was dropped (all sired by the same bull), there was so much of the stronger line breeding blood in the red cow, that the calf was in color like a full-bred Guernsey. Thomas Sharpless was not in favor of general inbreeding, though in order to get certain qualities implanted, this is necessary. He would not go out of the family if he could find the desired traits in it. Every time you make an outcross, the line is apt to be broken. Inbreeding will intensify all qualities, bad as well as good ; so it is all important to have good sound animals to work with.

Ezra Michener fully agreed in the necessity of being assured that with a bull or cow, we must see that the mother was good. In starting his herd, he had this advice given him from the person who supplied his first bull. He then thought 250 pounds of butter per year a satisfactory yield. Last year his average yield per cow, counting all his herd, including heifers, was 380 pounds each. Much depends on feeding and attention. It is possible to obtain great results at the expense of the cow. He had learned that the Jersey cows which made such records at the World's Fair, Chicago, had all been dead for two years. One of his fifteen-year-old Guernseys that was out there, is still alive and hearty. It wont do to force

nature unduly. Get good stock; then take good care of it. He thought it better to pay $100 for a bull calf from a 400 pound cow, than to use one from a 200 pound cow, even though presented to him.

Walter P. Stokes, of the well known firm of Johnson & Stokes, seedmen, Philadelphia, had numerous well grown samples of fodder crops, taken from his experimental grounds at Moorestown, N. J. He placed pearl millet at the head of the list, and showed a sample nearly eight feet high that had no plume on it as yet. The seed is grown in South Carolina; is not sure that it will mature here. It is planted about the same time as field corn, makes a great many suckers, and produces a great deal of good fodder, resembling both corn and millet, to a considerable extent. It has little wood fibre; one peck of seed to acre.

As second in value, he placed teosinte; the seed is grown in Brazil. They are about the size of plump grains of wheat. Three pounds of seed will suffice for an acre of ground; price, $1.00 to $1.25 per pound. He had known one seed to make fifty suckers. It is not as tall as the pearl millet; either, he thought, would make ideal ensilage. Teosinte is of the sugar-cane family.

White and yellow milo maize is grown in large quantities in the South; it has considerable woody fibre.

Kaffir corn is grown extensively in the West; costs $1.00 per bushel; seeds heavily; stocks woody.

Jerusalem corn was not particularly valuable, in his estimation.

Early Amber sugar-cane has a large quantity of saccharine matter in it, though it does not yield much fodder.

Australian salt grass was exhibited; it is adapted to regions subject to protracted dry spells; good for soiling, though not as good as peas and beans. The German coffee berry, a vetch, was good for soiling.

Some members thought the Johnson grass was of a kind apt to take too strong a hold of the ground, and could not well be eradicated when once introduced.

Prof. Voorhees, on being questioned, said that none of these soiling crops were really preferable to corn, though some of them could be made available earlier in the season, and could often be used to advantage as catch crops. He thought there was no one plant equal to corn. He liked a rotation of soiling crops. Last year he had kept twenty-five cows on eight acres for six months, and had two and three crops on same ground during the season. It

seems to be a common thought that millet is very hard on the ground. It is, to a certain extent, on the surface soil, but, considering the amount of plant growth, does not take more than other crops.

Though much time was consumed in discussing the topics of the day, the Association took time to enjoy the hospitality of our host, and to observe his good crops and working dairy herd, composed largely of Channel Island grades, headed by a thoroughbred Guernsey bull. Last month, his twenty-eight cows, including heifers, made a daily average of 240 quarts of milk. He believes in liberal feeding; this also applies to the household larder, even though a heavy shower visited us in the midst of our repast, spread under the shade of maple trees.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Tenth Month 14th, 1898.

The response to the invitation of J. C. and J. P. Sharpless, to hold a meeting of the Guernsey Breeders' Association, Tenth Month 14th, 1898, at the home of E. Maule and Sisters, near London Grove, Pa., was generous, nearly one hundred members and others having assembled. New members were elected:—Edward S. Kirkbride, Morrisville, Pa.; William F. Cocklin, Leonard, Pa.; Joshua S. Wills, Medford, N. J.; A. C. Brosius, Cochranville, Pa., and Samuel S. Thompson, Philadelphia.

Henry W. Comfort, President of the Pennsylvania State Dairy Union, stated that the annual meeting of that body would be held at Williamsport, in connection with the State Grange; much work can and should be done by the organization. There seems little doubt that a strong effort will be made to enact laws at the approaching legislature which will be burdensome to dairy farmers. In unity there is strength, and those present were asked to join the Union.

Ex-Congressman, J. S. Willis, of Delaware, spoke on lime. He began by paying a high tribute to the management of this large estate by ladies; and having been assured before the meeting that the substantial and commodious buildings were the natural outgrowth of agricultural pursuits, he had received an inspiring lesson in what women can do.

He said that it was a foregone conclusion that liming was necessary. The soils need mixing; and not only soils, but races of people, which fact was exemplified in this nation. As an illustration, he quoted Liebig; in effect that if the calcareous matter is removed from a box of earth, it will produce straw, but not grain. Restore it, and both grain and straw will grow.

Clover will grow without it, and after this crop is grown, the grain can be produced without the addition of lime, the clover taking from the air what the grain demanded. He knew of a tract of ground, heavy clay, and water-logged; sand was hauled on it, the soils mixed, and good crops resulted for years without further application of artificial grain food. It is important to supply deficiencies in the soil; also to correct the acids therein. Lime acts as a disintegrator, as also does frost. It is asserted by some that lime is a direct fertilizer, but that fact is not proved. He had no objection to other fertilizers, but thought much more could be accomplished by lime alone than was done; it was largely used in his State, and the people thought they could not get along without it.

The next speaker was Lloyd Balderston, of Colora, Md., the oldest man in the company, who had nearly sixty years experience with lime. His aim was so to apply lime, that it will act as a means of retaining clover sod. In his early years he was in the midst of the lime and plaster discussion; he had known land so poor that it only produced herd grass; too poor to grow timothy; he had grown crops of asters and put it in barns as hay. Clover and plaster had done wonders in tickling the soil; the plaster helped the clover, and the clover fed the crops.

In those days, it was thought by many, that lime was a direct fertilizer, that it made the sire rich but impoverished the son. This was experienced previous to the days of guano and South Carolina rock. Later, he settled in Cecil County, Md., where the land was mostly exhausted, but responded to the lime treatment, though it is possible to apply so much that it ceases to be effective.

He found it better to apply to grass land than on fallow ground; it sometimes is very slow in acting. A certain application did not make a marked showing until seven years afterwards, when that particular part of the field showed very decided improvement in grass. He hauled a large amount of lime from Chester County, Pa., and felt repaid; though on a second application he did not notice the continued improvement desired; he did not want to retrograde.

About this time guano came on the market, also South Carolina rock, and he supposed nine-tenths of the commercial fertilizer

used in his locality for the past twenty years, were of the latter kind. These new plant foods made good crops, but in time the clover suffered. His attention was forcibly turned to find a remedy. After mowing a crop of grass, the field would bear a heavy crop of dewberry and sorrel, there was so much acid in the soil. His aim now was to lime with reference to a catch of grass, and he applied it two years in advance of wheat, that conditions might be favorable for the coming clover, rather than on a wheat stubble, as is commonly practiced. He said that lime prepares other material to make plant food. He thought magnesia in the lime deferred the action thereof; that crops would not grow on spots where piles had lain some time.

Dr. A. T. Neale was using ground quick lime in an ordinary grain drill, applied exactly as artificial fertilizers, about 650 pounds per acre. This in theory, is for neutralizing the acid in the soil; he thought timothy grew best after lime. Rhode Island, he stated, had been making experiments on lime, using litmus paper to find whether acid or alkali existed in the soils, and the land was treated accordingly.

Prof. Harold Powell, horticulturist of the Delaware Experiment Station, spoke of variety, selection, and orchard management. He said that this branch follows agriculture. The farms must be established before trees are planted. Orcharding has grown very much in recent years. We have now the great apple belts of New York and Missouri, peaches and small fruits in New Jersey, etc.

Referring to the Philadelphia Society for Promoting Agriculture, founded in 1785, he said that that body discussed the depletion of soils, liming, and other subjects. At that time sections would be worked until worn out, then others taken up. It is important to study principles in orcharding. This means largely tillage of orchard lands.

About the year 1790, Jethro Tull, an Englishman, began a system of intense cultivation. He would stir his soil every few days; he thought plants took portions of the soil and digested it; and the more the soil was pulverized, the more the plants would digest. He thought manure was not needed; he was an extremist, though the results of his experiment were most successful. His theory was incorrect. Plants absorb the juices of the soil; tillage puts its into condition, lets in the sunlight and air; cultivation is manure. In western New York there has been trouble in recent years about fruiting of the orchards. Large sums of money were spent to ascertain the cause. It was found to be neglect. Orchards were allowed

to work for themselves in sod; lack of tillage was found to be the main trouble.

A clover crop is very advantageous. Crimson clover is most valuable for a mechanical protection, and by keeping the ground porous in winter, it can be worked sooner in spring, and increases its water holding power.

Humus makes the soil sponge like. He spoke of two orchards, one had three crops of crimson clover, the other had none. Two years ago, soil from each was sent to the Cornell Experiment Station, in New York. Samples were left in the laboratory three days in the dry air to see which soil had greater moisture holding properties. The result was as follows:

	Three crops clover. Per cent.	No clover. Per cent.
Water,	15.00	8.75
Nitrogen,	0.21	0.12
Humus,	2.94	1.91
Phosphoric acid available,	0.15	0.08

We must not depend too much on the fertilizer bag, but make use of the ingredients of the soil. Do not use crimson clover too heavily; it is apt to make too much growth of wood, which will be caught by winter in a green, unripe condition, and sun scald is apt to follow.

It is not safe to recommend a variety of fruit for general planting; only when soil conditions are the same, can such advice be followed to advantage. This is the reason why so many treatises on farming are worthless; some one has been very successful, and writes it up, but under varying conditions different results are attained. An apple in Oregon will be very different from the same kind in New York. Conditions and environments have entirely changed the character of the fruit. The variety receives certain conditions from its parents, but is largely dependent on surroundings. Do not depend on what other people say regarding a variety, unless you are sure your conditions are akin. There is no easier way to start dissension in farmers' institutes than to recommend the kind of apples to plant.

Regarding San Jose scale, he said we must not depend on legislative enactments, though they were very good. He recommended two pounds of whale oil soap to a gallon of water, sprayed on the trees in winter. Thoroughness is important; it must strike all parts of the tree. A windy, sunny day is best when coal oil is used, to evaporate the fluid. Its work is done at once; after this it is more

an injury on the tree than otherwise. He will use twenty per cent. solution of kerosene this winter ; the undiluted is unsafe for peaches, cherries and Japan plums.

Then adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Twelfth Month 23rd, 1898.

The Guernsey Breeders' Association assembled Twelfth Month 23rd, 1898, at the Colonnade Hotel, Philadelphia. The minutes of the last meeting were read and adopted. New members were elected as follows: David Roberts, Moorestown, N. J.; William J. Evans, Marlton, N. J., and Charles S. Carslake, Columbus, N. J.

H. W. Comfort thought the proceedings of our meetings should be published in book form. Organizations of perhaps less importance followed such a course. Much valuable matter was contained in the minutes of this body. The subject was discussed, and it was voted that the President and Secretary take the matter in charge, and they were authorized to publish a book, using such portions of the material in the Secretary's hands as seemed advisable.

Prof. E. B. Voorhees, of the New Brunswick, N. J., Experiment Station, spoke on "The Guarantee of the Purity of Dairy Foods." He stated that it was important to reduce the cost of production, rather than increase prices. When we want to get results from a dairy cow, we must feed more than merely enough to keep her going. We must give her food that will bring results. We cannot purchase protein and fat in the markets, but must secure foods that contain these important elements in greatest quantities. In fertilizers it is different; the farmer can get his nitrogen in nitrate of soda, potash in muriate or sulphate of potash, etc. In purchasing such materials as ground corn, oats and bran, there is not much variation, but in cotton-seed and linseed meal, buckwheat bran, gluten meal, etc., they are not only apt to vary widely in the constituents we want, but they are adulterated, and less likely to be useful for our purposes.

Cotton-seed meal should contain forty-three per cent. of protein, and as such is a valuable food when properly used. It is possible when using it, to work up more roughage than in foods of lower quality. The above is the decorticated. In former years, it

was comparatively easy to distinguish this from the undecorticated, in which hulls and all are ground. Formerly, these showed in form of dark specks, but now it is so finely ground and colored with some yellow material, that an expert can scarcely choose by the eye between the two. Yet the undecorticated brand contains but twenty-four per cent. protein, and it can readily be seen that two quarts per day of the lower grade (though in all probability at the same price) would not yield satisfactory results. In some States, the law requires that a certain amount of fat be guaranteed to be contained in special foods ; this was a move in the right direction.

In case of linseed meal, other matter is added, for instance, finely ground buckwheat hulls ; this makes bulk and some weight. In the gluten feeds, which are the products of the residue in the manufacture of starch from corn, there are as many as fifteen varieties, and they vary from ten to forty-one per cent. in protein. The Buffalo brand contains twenty-five to twenty-eight per cent. protein, and ten to eleven per cent. fat. In some grades only two to three per cent. of fat can be found. The Cream and King brands are richer than the Buffalo. If we knew just what these foods contained, there would be no need of a guarantee, but we do not know. For instance, a Jersey farmer bought a car load of gluten meal at fourteen dollars per ton ; the results were very satisfactory. Another car load was ordered from the same firm ; instead of twenty-five per. cent protein, as contained in the first lot, the second car load only analyzed ten per cent. This increased the proportion of carbohydrates, and threw the cows off their balance. If a guaranteed analysis had been insisted on, uniform results would have been insured.

Another man bought a carload of Chicago gluten, containing 41 per cent. protein; a second carload, called the same, only showed up 16.5 per cent. It is a matter of great importance that we should know the character of the products of the same general name. The extraction of fat from the Buffalo gluten is a comparatively new thing, though this has always been done in the Chicago brands. According to analyses taken at the New Jersey Station the following results were shown : Glucose Sugar Refining Co. had 37.25 per cent. protein ; Buffalo gluten, 27.92 per cent.; Iowa golden, 25 per cent.; Climax, 22 per cent.; Davenport, 28 per cent.; Rockport Sugar Refining Company, 22 per cent.; Atlas gluten, 10.28 per cent.

Corn bran is often called gluten meal. It is about the same quality as corn meal. With corn at 40 cents per bushel, it will pay

the farmer to buy good gluten at $18; but in buying the corn bran he is making himself poorer.

Peanut meal, made from the ground kernel is sold to some extent. It shows 37 per cent. protein and 5 to 6 per cent. woody fiber. An instance was cited of a man who was duped into buying peanut hulls finely ground, which contained 6 per cent protein and 67 per cent. woody fiber. His cows got diarrhoea, and were of course all out of sorts. A class of sucrene feed is made in Chicago, in which the waste products of molasses enter into the combination.

There is another class of foods where something is added, either as a stimulant or as a medicine, to stimulate the digestive organs; we had better buy our medicines at the drug store. A pound of digestible protein is worth just as much in one food as another, where no injurious ingredient is added, and there is no use of paying an extravagant price for them. If they were guaranteed to contain certain amounts of protein and fats, one great difficulty could be met. Oat foods are all right if it is known what they contain. Some kinds sell for about $14 per ton and contain much fiber, carbo-hydrates, and but little portein and fat, and it must be a very poor trade to sell oats and buy such stuff.

Ground oats should contain 12 per cent. protein. Cotton seed hulls should by all means be avoided as a feed. At the New Jersey Station they were feeding their herd a ration per cow of 35 pounds ensilage, four pounds of wheat bran, four pounds dry brewers' grains, and two pounds linseed meal.

Prof. Voorhees thought we should have a law to provide for the guarantee of the purity of dairy foods; though facts were being obtained which were important in framing such laws, and some delay was an advantage rather than otherwise.

E. T. Gill offered the following: "Resolved, That this Association approves legislation requiring a guaranteed composition of concentrated cattle foods." The resolution was discussed and adopted.

Henry W. Comfort, President of the Pennsylvania Dairy Union, was requested to report on the late annual meeting of that body held at Williamsport, Pa. He said that the membership had increased threefold within the past year. There was a very good exhibit of dairy machinery, butter, etc. No draft of a bill was made to present to the Legislature regarding the manufacture and sale of oleomargarine. The Wisconsin law, permitting the sale of oleomargarine under certain restrictions was upheld. The anti-

color laws were favored. Pennsylvania has fallen to fifth or sixth in importance as a butter-making State. It seemed wise to have a strong organization in view of pending legislation. He thought that we should appoint a legislative committee now, instead of at the annual meeting next month.

John I. Carter thought oleomargarine should be taxed out of existence.

John Sharpless favored the Massachusetts law, which has been sustained by the Supreme Court, but he thought the Wisconsin law was better. The general sentiment of the Association seemed to be that we cannot stop oleomargarine sales, and that the present law cannot be sustained.

Thomas Sharpless thought that this body should frame an act to be presented to the Legislature, and that a carefully selected committee of this Association should meet with the Legislative Committee of the State Grange to frame such a law.

Objection was made to the license law. The poor man, particularly the miner, wants oleomargarine because it is cheap. The anti-color law will not affect him unfavorably. It was voted that a legislative committee be appointed from this Association to unite with the Pennsylvania Dairy Union and State Grange in framing a law regarding oleomargarine and other dairy matters. The chair appointed Henry W. Comfort, George Abbott, and Thomas Sharpless.

Ezra Michener read a paper on the "Advantages of a Registered Dairy Cow." He said: In looking over some old papers recently, I came across the statement of a dairy friend, who said he was endeavoring to make his herd reach the two hundred pound butter notch for the coming year. The previous year it was one hundred and seventy-five pounds. He gave as his main reason for this increase the fact that the herd would include a greater number of registered cows than before.

I do not think any of us will admit that merely because a cow is registered she will give any more milk or make any more butter than she would if nothing whatever was known of her breeding. But the fact that the dairy cow should also be a registered animal, has as much to do with improvement along the line as anything which can be mentioned. The generally considered dairy breeds are the Guernsey, Jersey, Holstein, and Ayrshire. All have their good qualities, and the situation and tastes of the dairyman and breeder will decide the question of breeds or grades as may be best fitted for the purpose intended. We all know that

there are many excellent grade or common cows making as much butter as registered ones, but yet lacking the power to transmit their good qualities to their offspring, which an equally good registered cow possesses.

I saw a few days ago, three herds of Guernseys, two of them registered herds, and one in which only registered bulls had been used for several years. No man living could tell by their appearances which were registered and which were not, as all indeed were splendid specimens of dairy cows. Then, where is the real advantage of the registered cows? Why is she any better than a grade or common cow? In the first place, without registered cows and bulls, such herds as those above mentioned could not exist, as a registered sire would not be obtainable for starting in that line of improvement. The registered cow has been bred by careful breeders for generations, and her good qualities have become fixed, and are transmitted to her progeny as long as the dairyman works with this end in view. It will not do to enter the breeding ranks with good stock for a few years, and then accept anything cheap that may, and very likely will, be inferior, and thus lose years in work, and be forced to start over again to regain the ground lost.

If we look over the dairy districts of the country, we see a vast improvement in the cattle near where registered herds are kept, as nearly all, when they become acquainted with the high colored rich milk of the Guernsey cow, want to have at least some grades in their herds, and will patronize a registered bull for that purpose, if they feel that they are unable to start with thoroughbreds Perhaps as much benefit has been secured by this class, as by the owners of registered animals. They, however, do not have the satisfaction of knowing that they have been the prime cause of this great improvement around them. It is left to the breeder of the registered animals to know that the seed he has sown has fallen into fertile ground, that he has helped his neighbors equally with himself.

I do not think any one who breeds registered Guernseys in the right way can fail in obtaining a measure of success. Their good qualities have become almost certainly transmissible; and this positive fixed type is only possible here where registration and the using of only the best animals on both sides is faithfully carried out.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held First Month 30th, 1899.

The Guernsey Breeders' Association held its annual meeting First Month 30th, 1899, at the Colonnade Hotel, Philadelphia. Minutes of previous meeting were read and adopted.

The president spoke regarding progress made towards publishing the proceedings of the Association. The matter was freely discussed, and the following committee appointed to assist the President and Secretary with authority to act, viz: George L. Gillingham, Dr. A. T. Neale, Dr. M. E. Conard, H. W. Comfort, and Henry Marshall.

Nominations for new members then followed, viz: B. A. Tomlinson, Laurel Springs, N. J.; C. G. Wilson, Greenville, Del., and George P. Lippincott, Marlton, N. J.

The election of officers of the Association for 1899 resulted as follows: President, Ephraim T. Gill, Haddonfield, N. J.; Vice Presidents, George L. Gillingham, Moorestown, N. J., and Dr. A. T. Neale, Newark, Del.; Secretary and Treasurer, William B. Harvey, West Grove, Pa.; Executive Committee, Edward S. Harmer, Moorestown, N. J.; John M. Lippincott, Moorestown, N. J., and Henry Marshall, Norway, Pa.

President Gill was then escorted to the chair by the newly elected Vice Presidents.

Henry Marshall and Ephraim Tomlinson were appointed to examine the accounts of the treasurer for the past year, and reported a credit balance of $233.98 in his hands.

H. W. Comfort, on behalf of the legislative committee appointed at last meeting, reported that two of their number attended a meeting at Harrisburg composed, in addition to our committee, one each from the State Grange, State Dairy Union, and Horticultural Society; also, about fifty farmers. A bill was drafted, based on the Wisconsin Anti-Color law; license was an important feature; $5,000 fee for manufacturer, $500 for wholesale dealer, and $100 for retailer. It was difficult to place it under any kind of police surveillance. Copies of the bill were furnished chairmen of different committees of the legislature, and various members thereof expressed the belief that such a measure could be made law. The members of this Association were encouraged to use their influence with our members of the legislature towards having such a bill made a law and placed on our statute books. The labors of the committee were appreciated, and they continued to watch this and other legislation.

George L. Gillingham reported on the late meeting of the New Jersey State Board of Agriculture. A proposition was made to increase the appropriation in the hands of the Dairy Commissioner from $10,000 to $15,000. An affirmative vote was the result.

A Dairy Union was established, and forty-six members joined the organization.

Dr. Twitchell, editor of "Maine Farmer," gave an instructive talk on the dairy cow, stating that she was profitable or otherwise, according to her structure and individuality. The body should be wedge shaped, eyes far apart, and prominent; face should be dished; if the opposite is the case, she is apt to be of unsettled disposition and breechy. Muzzle should be long, also the tail; vertebra should be long. The compact, beefy animal, has as many vertebra as the dairy type, but they are short, thick set. Ribs should be wide, and distance between them about two-thirds width of rib. The neck should be thin at top and bottom, and should have no cushion where it joins the shoulder. Cows should be made comfortable. We should have plenty of litter, and invite them to lie down.

Dr. Goodrich thought that the future of the cow depended much on the first three months of the life of the calf; if, during that time it is kept fat, there is a tendency to flesh during life, and vice versa. The successful dairyman is he who in measure makes himself like a calf, or, in other words, makes the cow love him. We should feed a variety of foods, and should include succulent matter, particularly ensilage.

Dr. M. E. Conard spoke regarding the meeting of the Pennsylvania State Board of Agriculture, recently held in Harrisburg.

Dr. Pearson then reported progress in the struggle with tuberculosis. Years ago, when herd testing began, twenty-six per cent. of the animals examined proved diseased. Now only thirteen per cent. respond. He spoke of the law which requires that all dairy cattle coming into the State, shall be tuberculin tested; formerly, stock would come from the west to Buffalo, for instance, undergo a test, and the healthy ones sent to States where the tuberculin law was in effect earlier than in Pennsylvania, and the diseased cows were sent to us. It is now different.

The doors of the dining room were now opened; that meant an adjournment. Forty-eight members and their friends lunched at the hotel. In thus dining together, which has become our custom at the annual (city) meeting, we are enabled to have an afternoon session.

At this meeting, John I. Carter thought we should try to find something cheaper than the dairy foods which we have to buy. He thought we must feed more clover ; that this class of hay was only worth about four dollars per ton ; there seemed a disposition on the part of farmers to buy things that they should raise themselves. He did not have much success with peas, and suggested that Dr. Neale would probably know more about them. That gentleman, always ready to defend that valuable legume, said he had built an experimental silo of about forty tons capacity ; grew fourteen tons per acre on one and one-third acres. After pressure, he found that it weighed sixty-two pounds per cubic foot. He covered it with dry chaff, and had not two bushels of spoiled pea silage. The idea in putting on dry chaff is the same as in putting dry cotton to stop experimental vials in laboratory work ; it kept the spores of decay from getting down to the ensilage ; he uses the Whippoorwill pea. Do not plant an erect and a running variety together. A crop can be grown in three months, and he can get better results than with clover ; there is time to plant them after we find (as sometimes is the case) that our clover is a failure. He favored putting peas in one pit and the corn in another, where both kinds are used, unless operations are on a sufficiently large scale to have two lots of men, so that the loads can be put in alternately. He thought that a pound of protein from the pea vine was of more practical use than a pound of the same material from bran, though this is contrary to what we were told at last meeting. Experience has led him to a change of opinion in the matter.

B. C. Mitchell, of Brandamore, Pa., then gave us a talk on "Making, Saving, and Utilizing Stable Manure." He said in part that we have taken so much humus away from the virgin soil, that we had to put something back in its stead in order to grow our crops. Soil is made up of sand, clay, and humus, (organic matter.) He bought an old, worn out and unproductive farm, and by careful study in analyzing his soil, and judicious fertilization, it had become rich in plant food and a great crop producer.

Commercial fertilizers are composed largely of mineral matter, not enough organic ; he had great faith in applying liquid manure, and thought top dressing was the proper method of application. It is important to apply stable manure while fresh ; if left in yard for four months, it has been demonstrated that sixty per cent. of its effectiveness was lost. It is important to have the ground mulched ; even cut fodder, which some are apt too lightly to esteem, is most valuable for this purpose, and will produce excellent results in following crops.

Albert Haines then read a very practical paper on "Mixing and Application of Commercial Fertilizers:"

MIXING AND APPLICATION OF COMMERCIAL FERTILIZERS.

I belong to a club that bought last year 832 tons of fertilizer ingredients at a cost of about $17,000, which was 69.7 per cent. less than the average rebate price of ready mixed fertilizers sold in New Jersey, saving in our deal $11,849, or we had that amount saved to pay for mixing 832 tons, which is a very good profit. My percentage is taken from bulletin 132, New Jersey Agricultural Experiment Station, printed Tenth Month 18th, 1898, on analyses of fertilizer supplies and home mixtures, and the analyses and valuations of commercial fertilizers and ground bone.

In this bulletin we find that they have taken samples and analyses of 306 complete fertilizers, and find the average selling price exceeds the station commercial value by $8.68, or 43.6 per cent., and our general mixture was worth $5.32, or 26.1 per cent. more than the station commercial value, making 69.7 per cent. We also bought 100 tons of nitrade of soda, last Third Month, 1898, to be delivered the middle of next month, a year in advance, saving $5.00 per ton, or 16.6 per cent. on this year's prices. Our nitrogen in this will cost less than ten cents per pound. The station schedule price last year was thirteen cents.

Nitrate of soda is quite uniform in composition, containing about 15.80 per cent. nitrogen, or 96 per cent. pure nitrate. Nitrogen in animal matter, such as dried blood, dried and ground fish, tankage and ground bones, etc., is always more or less variable, and should be bought by the unit system. The dried blood that we have just purchased contained eighteen per cent. nitrogen.

Potash, in the form of muriate, high-grade sulphate and kainit, do not vary much in their composition. Muriate and high-grade sulphate of potash are manufactured and contain about fifty per cent. actual potash. Kainit is a natural or crude compound, and contains about 12.5 per cent. of actual potash in a sulphate form. There is enough difference in these ingredients to make it wise to buy them by the unit. We bought 1000 bags (224 lbs. each) this winter, on 80 per cent basis, 500 bags ran 82 per cent., and the other 506 bags, 83.3 per cent., pure muriate, making a difference of sixty cents per ton.

Phosphoric acid in super phosphate, or acid phosphate, in the many samples examined at the station last year, varied from 11.8 per cent. to 20.2 per cent. of available phosphoric acid. This ingredient should always be bought by the unit. The phosphoric acid and nitrogen, in pure ground bone or ground steam bone, varies somewhat, but it is found, where there is a high per cent. of phosphoric acid, there is a low per cent. of nitrogen, and when high in nitrogen, low in phosphoric acid. We bought steamed bone last year that run 2.89 per cent. nitrogen, 27 per cent. phosphoric acid.

We buy our ingredients early in the winter; in fact we have already bought all for this coming spring, and a great part of it has been delivered. We get it home early and mix it up according to the crop we expect to use it on, turning it over with a shovel at our leisure time, mostly rainy days, and screen it and put in a heap until we are ready to use it. I have a screen made like a coal screen, covered with three-eighth inch wire. We think we can, in this way, get it in as good condition as any of the ready-mixed fertilizers, and can put in whatever amount of nitrogen, phosphoric acid, or potash, the crop we wish to use it on may need. Some need a high percentage of nitrogen and less potash, and others the other way about, and also more or less phosphoric acid. Leguminous crops, such as clover, peas, beans, etc., absorb their nitrogen from the air, so do not need much or any nitrogen in fertilizers applied to these crops; phosphoric acid and potash is about all they need. All crops, except the leguminous, that are grown early in the spring, need more nitrogen than those growing through the hot summer months. Early potatoes need more nitrogen than late potatoes. All potatoes need a fertilizer high in potash. Field corn needs a fertilizer low in nitrogen and high in phosphoric acid and potash.

Applying fertilizers depends very much on the crop and circumstances. On some crops we use it broadcast, others in the drill or hill, and on some both ways. In all cases I think it should be applied near the surface of the ground and thoroughly mixed with the soil. When the nitrogen is derived from the nitrate of soda, I think most of the fertilizer, at least the nitrate of soda, should be applied after the crop has started to grow. Nitrogen in nitrate of soda is very soluable, and will soon disappear if it is not taken up by the soil soon after applied.

Dr. Neale said that in the Delaware Station they were using the slag phosphate, and in effectiveness found it equal to ground bone; cost of the former eight dollars per ton. He thought that we should top dress the ground early in the season, and favored doing this every year; he thought we got little profit the second year after application, from potash and phosphoric acid put under wheat.

Albert Haines puts nitrate of soda on his grass after it is well started. The idea was advanced that if a crop was fed extravagantly, it was not apt to economize its food, and failed to utilize resources of organic matter; frequent applications of moderate amount seemed a better plan.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Fifth Month 31st, 1899.

The Guernsey Breeders' Association held its first country meeting of the season at the home of E. T. Gill, Haddonfield, N. J., Fifth Month 31st, 1899. The day was fine, and nearly one hundred persons, the large majority of them members, were present. Four new members were elected in the persons of Franklin Dye, Trenton, N. J.; Prof. C. L. Penny, Newark, Del.; Walter E. Hunt, Haddonfield, N. J.; William E. Bailey, Thorndale, Pa.

Dr. A. T. Neale read a valuable article, prepared by our fellow member, John C. Higgins, U. S. Consul at Dundee, on "Agriculture and Dairying in Scotland," giving the causes of agricultural depression in Great Britain and methods adopted to correct them; reduction of expenses, and increase of production; the first method had for the most part been adopted in Great Britain, and in Scotland the second remedy had been largely in vogue; methods of feeding were given, and the subject of manures and manuring was treated as follows:

AGRICULTURE AND DAIRYING IN SCOTLAND.

FOODS AND FEEDING.

In addition to the foods produced on the farm, it is also the universal practice to give all cattle which are in the fattening stage from two to five pounds a day of oilcake or meal of some sort of grain. This also greatly enhances the value of the manure. The cost of such foods has fallen considerably. Linseed cake which cost at one time $60 or more per ton is now only from $30 to $40. American maize and Asiatic barley cost only $20 to $25 a ton. The use of these more concentrated foods permits the straw grown on the farm to be used for feeding, and thus utilizes a part of the crop which was formerly considered merely as waste, or at least only good for litter. By cutting the straw into "chaff," i. e. short pieces of one-half inch in length, and mixing it with the meal used for food, a value equal to $7.50 to $10 per ton is obtained from it in feeding. This is obviously an important addition to the profits of the farm. But in Scotland, especially a great deal of the oat straw has always been, and still is, consumed without being chopped, and it is reckoned as not greatly inferior to hay.

It should be kept in view that the feeding of cattle, and partly also of sheep, in the winter is an essential element of husbandry in all parts of Great Britain. On the poorest lands young stock, or "stores," are alone raised or kept without any attempt to fatten. On medium lands both classes, and on the richest lands cattle for fattening only, are kept. The reasons are found, firstly, in the

actual profits made in using hay, straw, or roots for growth and fattening; and, secondly, in the production of manure for subsequent crops. In connection with this system, what are called "green crops"—that is, mangel wurzels in the south and middle districts of England, replaced by turnips in the north and in Scotland, are a regular crop in the rotation. These have come in the place of the old fallow when the land was allowed to lie without any crop during the whole summer, in order that by frequent cultivation, weeds might be extirpated and fertility increased. These objects are now attained by the large amount of cultivation given to the green crops, which begins in spring and is carried on till they quite cover the ground in July, and by heavy manuring always given to them. This in the first place produces a crop varying from twelve to thirty tons per acre, and at the same time the land is left clean and enriched, so that it yields a subsequent crop of oats or barley, followed generally by clover or grass without further manure, or only with a dressing of commercial manure. These green crops, being consumed by cattle in the yards or by sheep penned upon them, furnish the manure for next year.

MANURES AND MANURING.

This manure is, however, in Scotland largely supplemented by commercial manures. That most in use is phosphate of lime, either in the form of superphosphate, basic slag, or bone meal; and this is principally applied to the turnip and potato crops at the rate of about three hundred-weight to the latter, and three to six hundred-weight to the former per acre. One or two hundred-weight of nitrate of soda or sulphate of ammonia is generally added. A hundred-weight of either of the two latter, with two hundred-weight of superphosphate, is frequently used as a top dressing for the grain crops in the spring or upon grass intended to be cut for hay. Potassic manures, chiefly kainit, are used to the extent of three or four hundred-weight per acre for potatoes, but rarely for other crops.

It must be remembered that the manure of the animals fed on the farm, which contains the manurial residue of much cake and meal, and is wholly kept under cover till applied to the land, is of high value. It is carted, spread, and plowed under in autumn, in winter, or in spring, according as weather and work permit. No difference is perceived in results arising from the time of its application.

AGRICULTURAL PRACTICES IN FIFESHIRE COUNTY, SCOTLAND.

I have, while resident at Dundee, had an opportunity of observing the general application of the system above described in the highly cultivated adjacent counties of Forfar and Fife, more minutely in the latter. Upon the North Sea between the Firths of Tay and Forth for a distance of nearly forty miles, lies Fifeshire, one of the most fertile and not the least picturesque of the counties of Scotland.

With Edinburg just south of it and Dundee just across the Tay, its northern boundary, it lies between two cities to which it offers sites of unsurpassed convenience and beauty for suburban villages, country residences, and landed estates. I have had on several occasions the advantage of going closely over one estate under the guidance of its owner, and I can perhaps best illustrate the special characteristics of the best Scottish farming if I give in some detail an account of the practice which I there saw in operation.

The Lomonds are among the noted bits of Fife Highlands, nested to the south of which lies Lock Leven; and to the north, just opposite, lies Ladybank, a station on the railway between Dundee and Edinburgh. A branch road runs toward Perth, taking which four miles by train will place us at Collessie, a small village of quaint thatched-roof houses and many evidences of a most respectable antiquity. One mile from Collessie brings us to the park entrance of Kinloch, the residence of J. Boyd Kinnear, Esq., M. P., author, agriculturist, and country gentleman. Kinloch house is by no means the largest of the stately homes of Scotland, but to say that there is not one more graceful or beautiful would probably not provoke an adverse opinion. The charming symmetry and delicate conceit of the softly shaded gray stone that everywhere forms the prevailing building material of North Britain can only be well understood, when we know that a brother of the present proprietor was a great architect, and that upon Kinlock he lavished his art with loving devotion. Once the home of the historic Balfour of Burleigh, it had many vicissitudes before it came (over a hundred years ago) to the Kinnear family, and for that reason gave a better opportunity for a full repair that resulted in the Kinlock of to-day. One hundred acres of park of stately trees, winding roads, and shaven turf; walled gardens with the usual wealth of flowers, fruit, and vegetables; and parterres and turf immediately round the house make Kinlock as charming a place as can be seen even in this land of homes.

Mr. Kinnear in farming adopts the system of cropping already described as prevailing in Scotland, as a basis, but modifies or extends it to meet his special requirements. His live stock consists of a herd of (at present) about 120 pedigreed Guernsey cows, with some sixty or more of their produce in various stages of growth.

For the disposal of the milk without risk of adulteration by middlemen, he has two stores of his own, one in the small town of St. Andrews, containing a population of about 6,000, and the other in Edinburg, the capital of Scotland. The former is distant by rail about twenty miles, the latter about fifty miles. In the former the milk is retailed at eight cents, and in the latter at ten cents per quart. The whole expense of the stores, of distribution, and of carriage, are of course to be deducted from these prices. They are, in each case, about two cents per quart higher than the rates current in the respective towns for ordinary milk. The demand for his milk is generally so large as to absorb nearly the whole supply, therefore butter is made only from such small surplus quantities as

may not be required, and it is scarcely a regular product of the dairy. At certain seasons, however, when the demand falls off through the occurrence of vacations of schools or the departure of customers on visits or to country quarters, he makes a considerable quantity both of butter and of cheese, and the latter, being made from the whole milk, is very rich, and sells readily at from 18 to 24 cents per pound. About eight pounds of milk suffice to make one pound of cheese.

METHOD IN THE STABLE AND THE DAIRY HOUSE.

In the stalls, the cows are fastened by chains around the neck, the ring of which slides on a rod so as to rise and fall as they require. The floor is of concrete, with a gutter, by which the urine is at once conducted to a tank outside. The solid matter is removed as far as possible immediately after it drops, and thus not a great deal of litter is required. The passages and gutters are washed every day till the water runs perfectly clear. The cows when soiled are first scraped, then the udder is washed, and the coats are brushed clean daily. The milkers, besides, use a basin of clean water to each cow to wash the teats before milking.

The milk when drawn, is at once cooled by being run over a refrigerator. But it has been found that mere aeration by being conducted in a very thin stream over wire gauze is about as effective for preserving it fresh as refrigeration. When set for raising cream, shallow pans are used without being surrounded by cold water, as it is found when milk is cooled (or even aerated) before it is set the cream rises as rapidly as if continuously surrounded by cold water. Mr. Kinnear is not careful to extract the last percentage of fat from the milk. There is, in fact, always a sale for the skim milk at eight cents a gallon.

THE YIELD OF MILK.

The yield of each cow is tested once a month by a day's milk being carefully weighed. Although there may be slight occasional variations, Mr. Kinnear considers that this furnishes a practical basis of sufficient correctness on which to calculate the total production for the year, especially as he has not hitherto sold any cows, and only seeks information for his own judgment. He considers that the normal yield per head over the whole herd (including young and old) ought to be six thousand pounds per annum. This has, in some years, been considerably exceeded, but during 1896 and 1897, owing to an epidemic of abortion, it fell to 5,850 and 5,350, respectively. The latter figure was brought down also by the introduction of an extra number of heifers, to make up for loss of older cows. A few individual returns may be quoted, extending over the last three years:

Name of cow.	1895	1896	1897
Violet XXII	7,110	5,770	11,020
Violet XXIV	6,200	7,720	8.580
Fleur de Lis III	7,750	7,520	7,530
Cowslip III	7,030	6,840	6,460
Lilac	8,360	8,930	9,040
Nerine III	7,710	6,970	7,950
Flora III	4,670	7,180	8,100

DISEASES AND REMEDIES.

To combat abortion, most of the remedies (including Nocard's) recommended have been tried, and it is believed to be now nearly extirpated. The chief reliance is placed on injection of a weak solution of izal, one of the coal antiseptics. Milk fever, or more properly parturient apoplexy, is not now dreaded, since the discovery by a Scottish veterinary surgeon of the remarkable effect of chloral hydrate in this disease. It is given at first in a dose of two drams followed by doses of one dram every second hour, but it is seldom, if taken promptly, that more than two doses are required. During several years, a great mortality occurred among the calves. They were carried off at from a few days to a month old by rapid inflammation, attacking one internal organ, now another. It appeared at last that it arose, in spite of full use of disinfectants and perfect cleanliness, from the mere fact of calves having been for too long a period brought up in the same shed. It appears to have been got rid of by repeated washing of walls and floor with chloride of lime solution made so strong that the person applying it had to hold his breath and rush to the open air for the purpose of breathing. This loss prevented the normal development of the herd by breeding only from the best animals, as the demand for milk required the whole surviving stock to be retained, and eradication was thus impossible. Care, however, has always been taken to use bulls from the best cows, and it is expected that the standard will now be raised much higher.

There are, however, certain foods which appear to exercise a specific action on the milk glands and to cause an increased secretion. One of these is the carrot. This root is largely grown in the Channel Islands where a yield of twenty tons an acre is obtained. Given to cows in a quantity of fifteen to twenty pounds per day, carrots will remarkably increase the yield of milk—to such a degree, indeed, that Mr. Kinnear has in Guernsey noticed that it is difficult to keep the cows which have this allowance from falling off in condition, no matter how much food of other descriptions is consumed. In a less degree turnips, which contain about six per cent. of sugar, have a similar effect in increasing the milk flow. "Dreg," which is the liquor remaining in the stills after distillation of whiskey, is in Scotland much used by town dairyman for a like purpose, but the milk produced by it is distinctly thin and watery.

BEST USE OF THE LAND.

In regard to the cultivation of land the first point kept in view is to obtain the largest quantity of cattle food, and the second is to obtain the largest amount of other saleable produce. About 150 acres are employed for summer pasture for cows and young stock, 10 to 14 for the growth of the green food given at night in summer, 170 for hay, 160 are in grain crops, 40 in turnips and 20 in potatoes. When there is a good crop of hay about one-half of it is sold, the price being from $12.50 to $16.00 per ton. The wheat and barley are all sold and as much of the oats as is not required for the farm horses, of which 14 are kept, consuming about two bushels of oats each per week. The potatoes also are all sold except when the price falls below $5 per ton, when they are given to the fattening stock, not to the cows, as they tend to make the milk and butter white. On an average the 120 cows consume during the whole year the produce of 180 acres of grass, 40 of turnips, and the straw of perhaps 30 acres of grain.

The grass cut for hay receives, as a rule, a top dressing of two hundredweight of sulphate of ammonia, one hundredweight of super-phosphate of lime, and one hundredweight of kainit per acre. The grain crops receive half the above quantities. Potatoes receive three hundredweight of kainit, and turnips three hundredweight of super-phosphate, in addition to about ten tons per acre of the farm manure. For the last few years Mr. Kinnear has given to the pasture grass the same top dressing as to hay. He finds that it pays, in bringing the grass at least a fortnight earlier, in keeping it growing even in time of drought, and in the enhancement of the nutritive quality of the grass. But what yields the largest amount of food is a mixture of Italian rye grass with red clover. This is shown with a grain crop. After the crop is removed it is lightly pastured and in Spring it receives a dressing of urine from the manure tank put on by means of a barrel mounted on wheels, and discharging into a trough pierced with holes. This treatment gives a growth of two feet or more in height by the beginning of May. As soon as this is cut a second dressing of the same description is given which in six weeks yields a second cutting of the same bulk, a third and a fourth follow before the end of the summer. In this way from thirty to forty tons of the most succulent and nutritious herbage are obtained per acre.

THE KEEPING OF RECORDS.

All the accounts of the farm and herd are regularly kept by the system of double entry. There the herd is charged with the cost of the food grown on the farm, of purchased food, and of labor in attendance, and milking, and expense of distribution; it is on the other hand, credited with the amount received for milk, butter, etc., the value of the calves and the manure produced. Each several crop is similarly charged with the cost of labor spent on it, seed or manure, whether produced on the land or purchased; and it is credited with its price if sold or its value if given to the cows

or other stock. Mr. Kinnear does not, however, take account of the residual value of manure after the first crop, this being of too uncertain an amount, and being fairly shared among all the crops by its addition to the general fertility of the land. He attributes the highest importance to the use of bookkeeping in this manner. it enables him to see the exact value of every crop, and of every system of cultivation, and thus to abandon such as do not pay, while extending and improving those which are profitable.

TREATMENT OF EMPLOYEES.

It may be mentioned in conclusion, that he adopts with the work people employed, a modified system of what is known in Britain as "profit-sharing." When the accounts show a net profit after payment of expenses, interest on capital, and the normal rent of the land, he divides it between himself and the work people in the proportion of their several interests, reckoning his own at the annual value of capital and land, and theirs at the annual rate of wages paid to them. In some years there has been no such profit, in others it has permitted a bonus or dividend of from two to seven per cent. to each on his wages.

In the discussion which followed, the matter of disinfecting stables was treated. Chloride of lime was recommended; a four per cent. solution was strong enough to drive operator from stable while making the application. This had proved effective in overcoming a serious difficulty in glanders in horses in Dr. Neale's experience.

Dr. Conard said that chloral hydrate he found too depressing when used as a remedy for paturient apoplexy—he had abandoned it in his practice.

Dr. Neale thought abortion was apt to make sad inroads for some years, perhaps, then apparently run its course; the nostrum used at the time as a remedy was apt to receive the credit of a cure. He gave it as his opinion, that, after a time, a herd became immune from the ravages of the disease, though heifers and other animals coming to the herd were apt to be affected. He thought this subject of immunity from disease, properly written up, would make good reading.

George L. Gillingham had suffered greatly from abortion, and dreaded it worse than pleuro-pneumonia; thought it would be a blessing if a vaccine could be made to counteract its effects.

Prof. C. L. Penny, of Delaware, read, an exhaustive paper on "Testing Milk," involving much careful labor.

Later, we had the pleasure of inspecting the choice herd of Guernsey cows, nearly all thoroughbreds, kept by our host. One could not but be impressed with the thoughtful special purpose breeding, evidences of which were to be seen on all sides. A special attraction was "Imported Glenwood Girl" and her seven daughters, five of whom have records of over 500 pounds of butter in one year. A striking family resemblance was apparent; large, shapely udders, good teats, well placed, set the business end of these members of the family off in great shape.

The buildings seemed well adapted for the purpose in view, breeding cattle, and supplying a superior article of milk for Philadelphia trade.

Adjourned.

WILLIAM B. HARVEY, Secretary.

Minutes of Meeting held Seventh Month 28th, 1899.

That the sphere of usefulness of this body is not lessening is attested by the fact that this meeting was, it was thought, the largest and most interesting, since the formation of the club. Mark Hughes, one of Chester County's model farmers, had extended an invitation for us to meet at his home; members and others responded with a hearty good will.

The meeting was called to order about ten o'clock by President Gill, and the regular routine of business was taken up.

Nominations for membership were as follows: J. P. Welsh, Bloomsburg, Pa.; Evan B. Sharpless, Londongrove, Pa.; Joseph S. Walton, Ercildoun, Pa.; John Tyler, Salem, N. J.; Richard M. Cooper, Ashland, N. J.; Charles E. Magill, V. M. D., Haddonfield, N. J.; James Ramsey, Londonderry, Pa.; C. B. Wilkinson, Avondale, Pa.; and C. R. Wilkinson, Avondale, Pa. They were duly elected members of the Association.

The Secretary and Treasurer had received no salary to this time, and it was thought that some compensation was due him; the matter was referred to the Executive Committee.

James L. Branson then read a well prepared paper on "Feeding Stock." He thought we must look a long way ahead sometimes to get accurate results, and must not draw our conclusions from one, or even a series of experiments tending in one direction.

We need to consider the adaptability of our soil to produce certain crops, and the effects to be produced therefrom, especially that which affects the length of life of the stock. We are too apt to feed a certain combination and get a good flow of milk, and conclude that we have solved the problem, but sooner or later the cows begin to break down under the stimulus of the food; the gain we have made in milk production is lost in the reaction.

The speaker is not an advocate of ensilage; he favored cutting the dry, rough food, then add meal, and moisten the whole; feeding roots to make up the succulent part of the ration, stating that it was conceded that roots were more valuable than their analyses show; there is no contingency of danger to health in their use; they add to the flavor and quality of the milk and butter. We need a food to keep up the normal condition of a cow or any other animal; to stimulate her to an abnormal production, is to soon exhaust her vitality and her power to produce; that every effort to bring the cow into competition with herself is against her. He thought that the by products of grain that we buy are as a rule dangerous and injurious. We know but little of their manufacture. If you continuously load an engine to its full capacity, it soon breaks down; in everything of this kind, we require reserve power to fall back on; this is true of a cow. We analyze the cow and find her component parts, then try to make one by chemical process; it is fun for the chemist, but death to the cow. He failed to conceive the economy in the farmer selling his corn, and after the manufacturer had taken from it the starch, sugar and other substances, buy it back at about the same price for which he sold it, as gluten meal; no wonder that farming don't pay when we let such a practice drain the life blood out of it. One would think, from the numerous foods on the market, that the factory had taken the place of the field, and that the farmer had given up his place of independence for one of servitude. We want to sell our surplus products, but not to buy them back as offal, at a price as great, if not in reality greater, than that for which they were sold. We should feed our stock from the products of the farm in their pure, clean state, and sell the surplus to feed the people of the cities, and thus need no certificate to prove their health-giving and life preserving qualities. This is the natural safe guard of the farmer, and makes him independent of the legislator and chemist.

Discussion followed; considerable unity was expressed regarding his views on modern feeding stuffs, though members were not ready to give up their silos for cut hay, fodder, and roots.

The second topic was: "What can now be done to increase supplies of stock food for the coming winter," by Dr. A. T. Neale. He said his idea was to raise a discussion on the subject; that he had arranged with two other members who had experience on special lines in feeding; in accordance therewith, George L. Gillingham was called to the floor and gave his experience with oats and peas. In order to lengthen the period for getting nutritious food in autumn and to save ensilage, he planted oats and Canada field peas about the middle of Eighth Month (August), cutting them late in Fall; in fact, they withstood heavy white frost, and could be used until freezing weather. He planted two bushels of peas and two bushels of oats, putting them in the same day. The following year he repeated the experiment, but weather conditions did not favor, it being dry after seeding. The crop furnished considerable pasture. He utilized ground from which soil corn has been recently cut for the oats and peas. Dr. Neale said there was a difference in Canada field peas; there is a variety grown for canning that is undesirable. He recommended that one should secure a prussian blue or light green variety from northern New York.

Thomas Sharpless said he had a neighbor who uses a hairy vetch, planting the seed in late Spring, and having the benefit of the pasture in the Fall. The seed is expensive, which is one drawback.

Mark Hughes gave his experience in feeding rye; he planted an eight acre sod field, and seeded most of it about the middle of Ninth Month (September); it had been top dressed during the previous winter; he used two bushels of seed per acre; a portion of the tract was seeded late in autumn; his herd of fifty cows was turned into the field this Spring and derived practically their entire roughage therefrom for six weeks—having only a grain ration in the barn; they would not eat hay; he had fed rye ever since he commenced dairying, cutting it and hauling it to the cows; but this year's experience was more satisfactory than formerly and financial results were alike good. The field was now luxuriant with a fine crop of corn, which bids fair to make an excellent crop.

A member thought of sowing rye at time of last working of a late planted crop of corn, and asked whether there was a danger of its being affected with fly; there seemed a little expression of fear that it would be injured by that dreaded pest, but a number of others assured that there was no danger and that the proposed course was a good one to follow.

Dr. Neale now took up his part of the discussion, stating that we had been told how to lengthen the succulent food for Fall feeding, and again, how to shorten the winter ration by feeding rye in Spring ; he would suggest an aid to the summer pasture. A practical feeder living in Delaware fills his silos in autumn with corn ; this is fed out by spring, and ready in Fifth Month (May) for the crop of winter oats and crimson clover, which has been planted the previous fall, say about a month later than this time, using one-half bushel oats and sixteen pounds crimson clover per acre.

In cutting, the crop is allowed to wilt some ; it is run through a cutter, same as corn ; it packs very closely. He had a sample of this combined ensilage with him. Landreth's had a crop of winter oats that had withstood a temperature of sixteen degrees below zero at Bristol, Pa., during the past winter.

Prof. Welsh stated that he had had experience with winter oats, and he first planted three pecks of seed, and from that amount had 103 bushels ; the plant stools very much.

Dr. Neale, continuing, said that while he was connected with the New Jersey Experiment Station, they experimented with Alfalfa; that they had a crop of it which yielded in eight weeks from planting, (cultivated) eight tons of green provender per acre. Speaking of planting in rows, and working it, and broadcasting, he stated, that for the first season, the first course was far in excess in yield; that in after years, there was but little difference. He had made quite a number of experiments with this precarious food product in different parts of the State, result, unsatisfactory.

In Delaware, he had not been successful at the station, though knew where it was being grown. Alfalfa is very rich in protein, and he much regrets our inability to grow the crop with a certainty; he warned against dodder seed, which is apt to come with Alfalfa ; when grown, it is a yellow vine with a white flower; after getting fairly started, it gives up its own root, and lives on the Alfalfa ; a real parasite.

A certain military officer had been very successful in introducing Alfalfa into Colorado, and upon being interrogated regarding his success, said the crop WOULD NOT THRIVE WITH WET FEET ; it wants high, mellow soil ; it will withstand more drouth than sorghum if other conditions are favorable.

Dr. Neale, after feeding three cows on pea vine silage, put them on good white and red clover, and blue grass pasture ; he made analyses after each method had been tested ; it was hard to detect any advantage in the latter ration.

The next subject on the programme was a paper by Dr. Joseph S. Walton, on "Education as a Factor in Successful Breeding and Farming," which appears elsewhere.

John I. Carter then followed with a well written paper on "Arborculture for the Guernsey Breeder." He stated that the successful breeder must not only be intelligent and careful, but must also understand the requirements of sales and dealings. If the merchant wishes to secure respectable custom, he must not only have his goods neat and tasty, but his whole surroundings must also show thrift. This invites custom, as well as indicates the popular character of the man's trade. This all applies to the breeder, and the more so, as owing to the isolation of many farms, some inducement seems necessary; he should have attractive surroundings, that the distant buyer may the more be satisfied. Given well kept farm buildings and grounds, we expect to find a prosperous owner and a good dairy.

It is certainly true that every man who cultivates a love of nature by surrounding himself with nature's trees, shrubs and flowers, opens up wide avenues for pleasure for himself, his family and his friends. It is a mind training that will be of use in any walk of life. It is not necessary to be a naturalist to enjoy nature; but a little training with the heart right, will enable us to note the various differences in trees and plants, their peculiarities and beauties. To the farmer, who plods his fields from dewy morn till darkening eve, what an ever changing, never ending panorama of interesting things to see, passes before him; not for a day, or a week, or a year, but from youth to old age; a stimulus in youth, and a solace and comfort in declining years.

A list of trees was given, which, in his own experience, had proven satisfactory; among the Evergreens, were Norway Fir, Hemlock Spruce, White Spruce, Colorado Blue Spruce, Rolandson Arborvitae, Retinospora plumoso, and the Cedar of Lebanon. Among the deciduous trees, are the Mossy cup, Willow leafed and English oak, and where space admits, the White oak, Pecan hickory. Paragon Chestnut is a handsome tree, and a profitable nut bearer. The Butternut, Japan walnut, Black walnut, Deciduous Cypress, Larch, and Sweet Gum, Jinko tree, the Birches and Beeches, Lindens, European and American, are good trees. Among the smaller trees, are the Magnolias, Japan Catalpas, Dog woods, Fringe Tree, Service Berry, and Paw Paw.

Among weepers, the Old Kilmarnock Willow Weeping Elm, and Weeping Dog wood. In vines, Ampelopsis Vetchi, and Ameri-

can Ampelopsis, Akebia, Wisteria, and Trumpet Creeper. Much depends upon early pruning and judicious arrangement on the lawn.

The matter of exhibiting portraits of prominent Guernseys at the approaching Philadelphia Export Exhibition, was referred to the following committee, viz: Mark Hughes, Charles Wright, Dr. Leonard Pearson, Henry Palmer, and Charles B. Case ; they were empowered to act.

After a three hour session, the assemblage, seated on the spacious lawn, porch, etc., were requested to keep their seats, and a toothsome lunch was handed round.

When the Association commenced its farm meetings, years ago, it was voted that a simple "standing lunch" should be provided ; this one, complete in every detail, came very near the mark.

After dinner, an inspection of the fine Guernsey herd and buildings was in order ; it was evident to all, that mature judgment and a practical mind had planned the commodious and convenient barns, etc., and that the cows, about fifty in number, were special purpose in their make up; their produce, in the shape of cream, is sent daily to Philadelphia.

At an afternoon session, the committee regarding exhibiting portraits, offered the following resolution:

RESOLVED, That it is the sense of the Guernsey Breeders' Association that it is desirable that portraits of animals of recognized, improved breeds, shall be exhibited at the Philadelphia Export Exhibition, with the view of encouraging export trade, and that the management is requested to provide suitable space for this purpose. Be it further

RESOLVED, That the President is hereby authorized to appoint a committee to confer with the Director of the Exhibition, and to solicit his co-operation to this end.

An amendment was offered and accepted, appointing a committee to solicit portraits for the exhibition, as follows: J. L. Hope, Mark Hughes, Ezra Michener, W. B. Harvey, and Henry Palmer.

The Executive Committee reported, that in their judgment, the salary of the Secretary-Treasurer should be fifty dollars per year, beginning at annual meeting of 1899 ; the report was adopted.

Adjourned.

WILLIAM B. HARVEY, Secretary.

EDUCATION AS A FACTOR IN SUCCESSFUL BREEDING AND FARMING.

We are now living in an age when education is a potent factor for success in almost every business and calling. There was a time when a farmer with little or no education, could, if industrious, not only make a living, but pay for his farm and invest a little besides. From the breaking out of the French Revolution until the fall of Napoleon the productive industries of Europe were paralyzed. For nearly thirty years the armies of Europe created abnormal prices for farm products. Eastern United States rapidly became a producing section. With wheat at $3 per bushel, and other cereals in proportion, the farmer lived in clover, if we estimate upon modern standards. He was sure of more than a living if he did a day's work after the tread-mill fashion of his father. With his ax he could cut out a farm from the forest. To burn these trees, and farm the same field in corn until it refused longer to raise corn, and then go cut another field from the forest required no particular education beyond a strong back and hardened muscle. To let the stock run wild in the woods, to mow such grass as chanced to grow naturally in the meadows, required no special educational training. The steady rise in real estate value added to his wealth in spite of his ignorance. The abnormal prices occasioned by the Napoleonic wars, brought him from his annual sales of pork, corn and wheat as much money as his more cultured and educated neighbor received. Since these things were so, since agriculture was the most profitable business for the money invested, since little or no capital was required beyond a sharp ax and toughened sinew, since daily, unremitting toil, not skill, brought the reward in those days, a generation grew up, the majority of whom placed a low value upon education for the farmer or his wife.

While the conditions have absolutely changed since then, it is singular how this opinion still lingers in certain minds. And yet upon second thought, not so singular after all. The colonial method of working out the road tax was suited to that day. The principle thereof, however, still lingers in men's minds, especially farmers' minds, and militates against good roads to-day, more than any one thing. The world grows apace, but some ideas stand still.

During these same Napoleonic wars, the French and English merchant trade was, to all intents and purposes, swept from the high seas. The American flag found that it could escape the decisions of the European high Courts of Admiralty in reference to neutral trade by resorting to the broken voyage. The American merchant marine became the carrying power of the world. The produce was first brought to the American coast and entered in her ports, the duty paid, new clearance papers secured, new insurance issued, and the vessel, which went through all the forms of unloading her cargo, set forth to her final destination, having all her import duties refunded except three per cent.

Thus by the broken voyage, United States levied a three per cent tax on the trade of Europe with her colonies. It therefore be-

came the boast of Jefferson and his followers, that during his administration he did not have a tax gatherer; and to this day there are men who say that if we would go back to the good old economical ways of Jefferson and his party, we could eliminate the necessity of a tax gatherer.

To apply these old and obsolete ideas to modern life, begets disaster. And in the same sense, to insist that the farmer can prosper as well, if not better, without an education as with, is the result of entertaining an old and obsolete opinion, and endeavoring to graft it upon modern life and conditions.

Our grand-fathers imbibed the idea from their fathers that any numbskull would do for a farmer; that education was only necessary for commerce and the professions. So deeply has this prejudice rooted itself in the minds of farmers, that to this day, men can be found who insist that the mental training considered essential for success in other lines, is not necessary for the farmer. Through three generations this opinion has been nurtured to the evident detriment of agriculture.

After Napoleon's overthrow, prices in America fell; wheat from $3.00 to 50 cents per bushel, and other things in proportion. Financial distress followed, and brooded along the coast like a nightmare. Old methods of farming counted for nothing. Labor, industry, economy, the virtues which had been instilled into young men by their fathers, brought no profit. Debt and poverty were everywhere. There was only one class of farmers who escaped, i. e., those who had introduced rotation in crops. the sowing of clover on the up lands, the sheltering of stock, the burning of lime, and the sowing of plaster. These men were among the better educated among farmers. They did their own thinking. They even organized farmers' clubs. These men remained and garnered the harvest of skill and trained thought. The uneducated, those who refused to change their old ways, went into the hands of the sheriff, or abandoned their farms to their creditors, and went west, where they imagined they could farm without the embarrassment of thinking, where rotation in crops was not necessary, where the fertility of the soil would compensate for their lack of skill.

After Napoleon's time, improved land fell to one-fifth its former value. The fields on the abandoned farms grew up in briars and sumac, the thatched roofs rotted down. Out of this neglect and loss, a new class of farmers sprung, men who learned from those who had weathered the storm. These men bought land low and believed in improvements. The soil should be fed. Commerce made way for manufactures, and a home market was created. Land values increased. The next generation of farmers found that it was possible to do well by imitating the ways of their fathers. It was not so much education as work which counted. Thus we are able to realize why so many farmers to-day place a low value upon education as a factor towards success.

To-day we are living in an age of syndicates and centralizing capital. Millions are made by combinations the like of which our

fathers never knew. The fertile plains of the west have proven themselves to be the producing centers of the world. One man in the great wheat growing belt can, we are told, grow with his own labor, aided by machinery, enough wheat when ground and tolled, and all expenses subtracted, to feed 1000 men in London for a year.

New difficulties confront the farmer of to-day. A trained intellect becomes a necessity. It vigorous thinking is helpful to commerce and manufacturing, much more is it helpful in agriculture.

Six Dutch gardeners were imported some years ago by four Wall Street brokers, to raise vegetables on a piece of land they owned in common. The Dutch gardeners grew the vegetables and fruit, here their skill ended. It required a young man with trained mind to supervise the packing, and arrange for the selling of that produce. So well was this done that the brokers annually congratulated themselves, when 14 per cent. dividends are struck on their investment. Fourteen per cent., they say, is a larger income than they can make on capital invested in Wall Street. An important factor in this enterprise was the education of the manager.

The question then arises, is a college education wasted on the the young man who intends to be a farmer and a stock raiser? Is a college education wasted on the young girl who marries a farmer?

Because self trained men who have started with severe educational limitations have made farming a success, does not in any sense negative the proposition.

Because Abraham Lincoln, a self-made man, was a successful President, does by no means convince us that a college education is wasted upon a man who may be elected President of the United States. The successful stock breeder and farmer needs the power to gain knowledge from things. The physician, the veterinarian, the scientist, need this same power, and no one denies that an education for these professions is requisite.

The modern methods of laboratory teaching train the mind to an eminent degree to gain knowledge from things. The successful stock breeder especially needs this training. A close observer he must needs be, one who is capable of seeing the truth in the phenomena around him ; and as he draws inferences and secures facts, he must be able to read between the lines.

The skilfull teacher realizes the profit in being able to select good instructors. And he chooses, not always from the measured results, but from promise. He estimates upon this promise in proportion to his power to draw conclusions from appearances. He reads between the lines.

The successful breeder realizes that something more is needed than weighing and testing the heifer's product. It is possible to sell off the progenator of a valuable strain of stock if scales alone are depended upon. The successful breeder reads signs he cannot define, and notes promise in the heifers which has its value. There is a line of educational training which is especially helpful in this connection. The successful farmer, therefore, needs the skill of

the specialist, and he can not get this on the farm any more than a young man can become a good physician by riding around with his father, who is practicing medicine.

But the successful farmer needs more than this special knowledge ; he needs that all round ripened knowledge which trains the judgment. Special training produces the expert. Excess of training in any one line is accomplished by a loss of function in some other department. The oculist, the abdominal surgeon, the expert in nervous complaints, can all prescribe in their special lines ; but the human system often needs and profits by the ripened judgment of a physician who is not a specialist, but has a broad knowledge of all.

While the successful farmer and breeder needs especial knowledge, needs the expert's training in one or more lines, he still more needs that all round knowledge of all his work, which will enable him to exercise a wise discriminating judgment in his business affairs. It makes him self poised, and prevents him from running to seed on some whim or fancy which would ruin his bank account. In addition, the successful breeder and farmer finds himself brought in contact with educated men. They are his best customers. If he would retain their interest and secure their patronage, he must be able to convince them that his stock, his methods, his care in breeding, are among the best ; a good education is essential here. It is one thing to grow good stock, it is another thing to find and retain a profitable market for the same. There is one thing more, the farmer's success should not be measured by dollars and cents. Man does not live by bread alone. The farmer's life has in it something more than ledger balances. It has been said that farmers and sailors, men whose daily avocation brings them in contact with forces beyond the control of man, forces which compel them to change their plans with the changes of the weather, furnish a better basis for the reception of religious faith and trust than men in other pursuits.

If this is true, if the life which environs the farmer induces such influences, if his thoughts tend to be free, and his impulses honest, surely then must the right kind of an education put him into unfettered possession of all his talents. Who will then deny that such training will be unprofitable to the community, and to the State ?

If the farmer's home furnishes superior opportunities for the education of his children, and the training of good citizens, if the pillars of the church are grown there, surely then the farmer's wife should have the very best education the land can afford.

That education and manual labor are not incompatible is constantly illustrated. The right kind of education creates a love for work, a love for activity. It is not education, but society, which threatens to degrade labor. A newspaper clipping comes to my hand of a school teacher whose education never diminished her love for manual work :

"Miss —— ——, daughter of 'Squire ———, of —— ——, a successful and popular Chester County, Pa., school marm, has won renown as a haymaker on her father's farm. Miss ——— has given proof of her ability as a teacher, haymaker, and CHERRY PIE BAKER. Lucky, indeed, is the man who secures her as a life companion."

Farmers should remember that millions come only to the very few. That in commercial circles thousands fail, and thousands more live in constant fear, and endure privations not known to the farm.

As a class, farmers are more successful in proportion to the money invested, the care and attention and intelligence bestowed than almost any other class.

Let farmers remember that the man of fortune labors like a slave for ten months, that he and his family may enjoy during the other two what the farmer gets for nothing, i. e., pure air, blue sky, shade cooled breezes, sparkling spring water, green lawns, gorgeous sunsets, singing birds, and sunny days free from care. When the farmer adds to his blessings a good liberal education, an education which brings him peace of mind, he may well feel that life has little in store better than what he enjoys. The state may lean upon him for support, and the church find in him a pillar.

DR. JOSEPH S. WALTON.

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